Modern Ideas on Physical Education

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MODERN IDEAS ON PHYSICAL EDUCATION

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An encouragement to further reading
for students and teachers

by

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To
MY FATHER
with many, many thanks

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Foreword

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THERE have been comparatively few publications on Physical Education in this country during the past half century. Even of those published, quite a number have been translations, and of the rest many have been little more than syllabuses or practical manuals. The corresponding period has seen a spate of publications on this subject from America.

This small book of Mr. Randall's serves as a useful guide to the student who wishes to read selectively from American sources, and his selection appears to me sound; but this book is no mere guide to trans-Atlantic reading material. It is thought-provoking and a useful contribution in itself. With a nice admixture of progressive ideas and common sense, the author invites us to consider principles as well as practice. It is a stimulating and useful book, and I welcome the opportunity to introduce it.

Preface

STEVENSON claimed that to travel is better than to arrive, and similarly it can be argued that the true beneficiary from a course of lectures is more often than not the lecturer rather than the lectured. This is the more likely when a lecture is an expression of a point of view derived from wide study and considerable thought and these processes have not been shared to any extent by the students themselves. It is not for the lecturer to aid the student to arrive without first requiring of him the burden of travelling. Guidance may be given, short cuts indicated and assistance proffered, so that the route can be followed the better; but the ground has still to be tramped rather than flown over, and a lecturer's job is that of a guide rather than of a pilot. It is with the intention of assisting as a guide that this volume has been written.

In the past, attention has been directed too often towards Scandinavia with a resultant identification of Gymnastics with Physical Education—a confusion of the part for the whole—and American and Dominion opinions have tended to be neglected. Despite present currency difficulties American books on Physical Education—and they are legion—are becoming increasingly valued over here, although many of them must strike the student reader as formidable in size and bewildering in detail. Some direction, therefore, of what to look for and where, would seem desirable. In this book I have attempted to discuss various aspects of Physical Education which strike me as relevant and topical. In so doing it is hoped that a wide reading from a variety of sources will be encouraged. For this reason the references have been made as numerous and precise as possible. However, appreciating that devaluation has increased the difficulties of acquiring rapidly a representative selection of American and other books, and realising that nothing is more frustrating than to receive recommendations for further information that is not to hand, I have tried to make these discussions self-contained, although whenever possible other or further sources have been indicated. On the other hand, the book is intended for students of the subject, from whom a background familiarity with the topics is expected. An effort has also been made not to quote or refer only in support of my own point of view, and thus some references may be followed up to find expression given to conflicting opinions.

Chapter VIII is of the nature of an airing of a personal prejudice. It represents an attempt to establish a common-sense attitude to the critics of schoolboy boxing, who, I feel, are apt to base their charges on physiological opinion which is more applicable to the adult and professional fields.

The books in the Bibliography are nearly all contained in the College Library at Worcester, where the growth in size of the Physical Education Section has been followed by a directly proportionate increase in interest on the part of the Students. Thanks are due to the industry and kind cooperation of the librarian, Mr. Worner, in tracking down the American publications. One of the most popular and best acquisitions has been the back numbers of the *Journal of Physical Education* and of its predecessor the *Journal of Physical Training, Health, and Hygiene*. These have also occasioned a deal of casual reading by students other than those directly interested in Physical Education as a 'main subject'.

Despite the modesty of its scope and size, this book has come into being assisted by a host of Worcester friends, among whom mention must be made of Mr. Hines, our late Principal, who, despite pain and ill-health, remained to the end an inspiration and friend to all who knew him; of Mrs. Deb. Burrows for help with regard to Infant Education; and of my sister and colleague Marjorie Randall, who has given me every assistance and criticism—much of it pungent—which has been invaluable. I must also record my appreciation and indebtedness to Mr. Bouffler, Warden of the Carnegie College of Physical Education, for his help in editing the manuscript; to Mr. Munrow of Birmingham University for so kindly consenting to provide a 'foreword'; to Dr. Bourroughs of the Research Department of the same University, and to Mr. Young, Organiser for Worcestershire, along with my thanks for the cooperation of the schools concerned in the investigation into the effect of junior football coaching. Finally, my thanks are due in great measure to the Publishing Committee of the Ling Physical Education Association and in particular to Miss Pugh, the Editor, with whose help this book found its publisher.

M. W. R.

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Glossary

AFFERENT IMPULSE: A 'sensory' impulse conveying information to the Central Nervous System.

ANTAGONIST: The opposing muscle to a 'mover'.

CONCENTRIC ACTION: A muscle contracts to draw its origin and insertion nearer together.

ECCENTRIC ACTION: The lengthening of a muscle through controlled 'giving-in' to resistance instead of through the contraction of its antagonist.

EXTEROCEPTIVE STIMULI: Afferent impulses to the Central Nervous System from the skin and sense organs.

EFFERENT IMPULSE: A 'motor' impulse away from the Central Nervous System to initiate action in response to sensory stimulation.

FIXATORS: Muscles that contract to stabilise a bone in order to provide a fixed point on which another muscle can pull.

INTEROCEPTIVE STIMULI: Afferent impulses to the Central Nervous System from the viscera.

INNER-RANGE WORK: Muscular action within that half of the full range of a joint in which the muscle may reach maximum shortening.

OUTER-RANGE WORK: Action within that half of the full range of a joint in which the muscle may reach maximum lengthening.

PRIME MOVER: The main muscle directly concerned with a joint movement.

PROPRIOCEPTIVE STIMULI: Afferent impulses to the Central Nervous System from muscles, tendons and joints.

SOMATOTYPE: A type of physique according to Sheldon's classification (see *Appendix A*).

SUBSTITUTORS: Muscles that attempt to compensate for lack of function in another muscle (through injury, weakness or disease) by coming into play where, under normal conditions, they would not do so.

SYNERGISTS: Muscles that act to inhibit or neutralise unnecessary accessory movements.

TONE: A state of partial contraction in a muscle through the total contraction of a small number of fibres which take it in turns to maintain this state of preparedness. A characteristic of a trained muscle.

'The essential problem before the Student or Teacher of Physical Education is to arrive at a point of view that he can live with, acquire an attitude that he can support and, if necessary, defend.' Jesse Feiring Williams
in *The Principles of Physical Education*

I

The Aims of Physical Education and of the Physical Education Lesson

P.E. AND P.T. THE NEED FOR DEFINITIONS

THE words Physical Training, Physical Education and Gymnastics are often loosely used, sometimes to mean one and the same thing, and at other times with entirely different meanings. In the interests of clarity, therefore, it seems necessary to mark distinctions of meaning, which undoubtedly do exist, with a few definitions.

The words are not synonymous. Physical Education is a term used in a wide sense to cover all physically active pursuits ranging from games, gymnastics and athletics to the ex-curriculum pastimes of camping, hiking, rock-climbing and sailing. Often some aspect of Physical Education is vaguely referred to as 'P.E.', just as Geometry might be marked down on the timetable as Mathematics. In both cases the curious must seek further information and ask—what branch of Mathematics, or what branch of P.E., is being catered for at this particular time?

In the school hall, playground or gymnasium a type of lesson has been evolved from gymnastic origins, in which it is intended to provide exercise and to develop the basic skills of a variety of sports. These lessons have until recently been known as 'Physical Training Lessons' or more simply as 'P.T.' With the more widespread use of modern educational principles in connection with such lessons there has been a general revulsion against the term P.T. Yet to mark these lessons as P.E. on the time-table and to be specific with regard to Swimming and Games implies too sensitive a reaction from the word 'training'. It is understandable that new methods should be distinguished from old by the coining of new words. Today few would wish to use the words 'physical jerks', even if the movements involved were interpreted in a rhythmic manner utterly unlike that implied in the name; but the word 'training' need not suggest drill nor regimentation in the way that 'jerks' implies pain, ignorance and misapplied exertion.

Training is a process upon which every athlete embarks in the development of skill and stamina. It need not savour of drill or discipline other than that which is self-imposed and without which no athlete can hope to attain high honours. To many 'P.T.' is a well-established phrase that clings even to the speech of those who would adopt a new jargon, and it is a word that can be indicative of exercise interpreted freely and in accordance with enlightened thought.

However, if the word 'education' must be substituted for the word 'training' in order to describe the freer types of lesson now in current use, for the sake of clarity the session in the gymnasium, in the hall or in the playground should always be referred to as the Physical Education LESSON, or P.E. LESSON.

Physical Education, then, covers the whole field of physical activity, all sports and pastimes in and out of doors of a competitive or recreational character involving either team cooperation or individual effort. The Physical Education lesson means something more restricted—a session of various skill practices, a lesson with a gymnastic core or at any rate of gymnastic ancestry. Gymnastics, as far as these discussions are concerned, refers to the execution of prescribed movements of limbs and body designed to strengthen various muscle groups and to induce or retain the suppleness of various joints. Scandinavian tradition has linked gymnastics with vaulting and agility to make up the Gymnastic Lesson. Today in Great Britain there is merely a gymnastic basis to the modern P.E. Lesson, which includes, besides attention to vaulting and agility, coaching in the skills fundamental to a wide range of games and athletics.

Physical Education and the School Curriculum

Physical Education embraces many sports and outdoor pursuits, few of which can be included in the school time-table. The Ministry of Education is alive to the fact that in the past P.E. has been interpreted in terms of little more than the P.T. Lesson, but despite Ministry Courses for Teachers in Camping and Rock-climbing, the average school can attempt such ambitious projects only occasionally as out-of-school activities. To think of Physical Education in schools too much in terms of the excursions indulged in by the 'Outward Bound' type of school is often to be entirely unrealistic.

The number of hours devoted to all the subjects on the curriculum is limited, and the claims of P.E. have to compete with those of the other subjects. A fair balance must be preserved to give the child a reasonable chance to develop his mind, his body and his personality. The allocation of hours to P.E. is unlikely to be so generous that large-scale explorations far afield can be arranged very regularly. The Lincoln Experiment [1] has disposed of the theory that extra time spent on Physical Education (possible only at the expense of certain other subjects) is 'amply repaid by its stimulating effects *on the minds* as well as the bodies of the pupils'. The Physical Education Lesson figures in the time-table to the extent that it does because it enables a large number of children to take part in concentrated and controlled exercise in a limited space in a limited time. Given unlimited time, there could be little justification for the devotion of a high proportion of time to this aspect of Physical Education alone.

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[1] *Experiments in Homework and Physical Education.* A. Sutcliffe and J. W. Canham. John Murray. Pp. 97, 190–191.

In normal circumstances the school can hardly expect to cater effectively for more than a few of the major team games with the addition of some athletics, swimming and the Physical Education Lesson. Without the organisation of a deal of the sport as an out-of-school as well as in-school activity, the interpretation of Physical Education would be even narrower. The scope depends on the school, the existing facilities, the number of games-competent members of the staff and the opportunities present in the locality for the continuation of school activities after school-leaving age has been reached. Obviously the Secondary Grammar School with its greater age-range can be expected to take its games to a higher level than the Secondary Modern School. The degree of competence attainable within the age-range of the school concerned should have an important bearing on the choice of games for the school. Rugby might be an unfortunate choice if the size of the school were severely limited, if little Rugby were played in the immediate vicinity or if the boys leaving, as in the case of Secondary Modern Schools, at fifteen had little chance of playing in the local clubs for another couple of years.

A greater age-range allows a school a greater degree of specialisation in the upper forms, with concentration on some preferred aspect of Physical Education to the exclusion of another. Obviously, specialisation of this sort should not take place at too early a stage; but, after a grounding in the basic skills of various games, it is folly to insist that the cricket-loathers carry on with the game, especially if an alternative preference can be supplied readily—tennis, athletics or rowing.

Fives, squash, boxing, basketball, badminton are games that are taken up in addition to football and cricket and the school's other major games by enthusiasts in many of our public and secondary schools, usually on a club basis, as an after-school practice. With the future easing of the national building problem it is to be hoped that facilities for the two first named will not be confined to the privately endowed schools with their roots in the traditions and wealth of the past.

THE AIMS OF PHYSICAL EDUCATION

The Physical Education in a school should cover as wide a field as is compatible with efficient coaching, the facilities provided and the time available. There seems to be little point in introducing to the School Sports Programme various field events that require specialist coaching when such is not available. So often the impression gained is that School Sports are merely brought 'up to date' with the inclusion, say, of javelin and discus, since the performance of the children betrays a complete absence of effective coaching. In such circumstances would not the children be better employed in 'throwing the cricket-ball'? The headmaster's prowess in, or prejudice for, a particular game should not necessarily mean the domination by that game of the Physical Education Programme. The outstanding performer has often reached his high standard by concentration on one game to the neglect of others; moreover, the one-game enthusiast is perhaps tempted to justify his preference on obscure moral grounds, finding superior effects upon character from the indulgence in one sport instead of another! Again, some games may be favoured as being charged with more desirable social connections: such reasons do not bear thoughtful analysis, nor are they in keeping with decent democratic principles. On the other hand, a growing difficulty in keeping a full fixture list, or a natural desire to make use of first-class coaching talent freshly to hand, may legitimately prompt a change, or at any rate the inclusion of another major game; but the overriding factor to be considered is the relationship between the boys, the school and the community it serves, and the opportunity for continued active participation after leaving school. That is the paramount consideration that should govern the choice of games within the Physical Education programme.

The aims and claims of Physical Education are many and varied. Extravagant claims have been made in the past, over-statements in an effort to 'sell' the subject. Nixon and Cozens[1] point out that the popular alliance of Health and Physical Education can be over-emphasised. Scientific evidence does not support the assumption that muscular exercise increases resistance to disease. The minimum of physical activity needed for organic health is probably far below that advocated by the competitive games enthusiast, and can certainly be obtained in other ways. Admittedly, this is to regard Health in a narrow and negative sense as mere absence from disease, but even with a more positive conception there are stronger grounds for justifying Physical Education than as a mere Health Insurance Scheme. Physical Education is essentially worth while, and can be practised for its own sake.

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[1] *Introduction to Physical Education*. E. W. Nixon and F. W. Cozens. W. B. Saunders Co. Pp. 62–63.

Le Maistre,[1] in discussing the question of the aims of Physical Education, suggests that there are:

1. immediate objectives;
2. general aims; and
3. an ultimate aim.

This seems to be a clear pattern to follow, avoiding all irrelevant considerations. Whereas the immediate objectives tend to be peculiar to Physical Education or to some aspect of it, the general aims, and in particular the ultimate goal, must be shared with other aspects of Education generally.

Nixon and Cozens [2] argue that 'good citizenship' is too vague an ideal, desirable although it undoubtedly is and although all aspects of Education should be concerned with contributing towards such an end. Perhaps the ultimate goal might be more acceptably defined in the familiar terms of the balanced and optimum development of body, mind and personality.

To achieve this ideal, as far as Physical Education goes, the child should be given all opportunities in which to develop a love for activity in the open air, a love for physical exertion and a love for a healthy way of life. The last named suggests, more than organic and physical health, a true sense of values and of moral standards. There are the moral qualities of resolution, initiative and self-reliance to be fostered and the social attitudes of good sportsmanship, fair play and self-discipline. How far these qualities can be developed, and when developed can be transferred to other situations in life, depends to a certain extent on the attitude and character of the teacher, his sincerity and ability to inculcate them as ideals, and not, for example, as a means merely of providing a more satisfactory game. Also, still under the heading of 'general objectives', there is that of a balanced erect physique—a goal not the concern of the P.E. Lesson alone.

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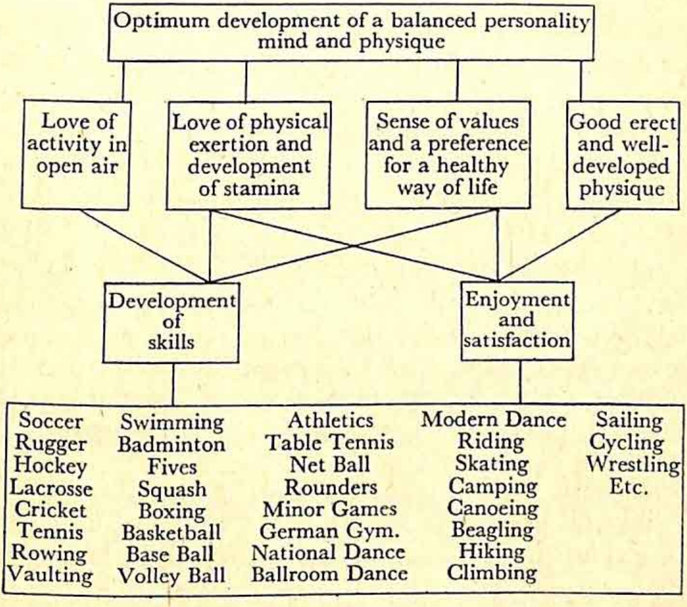
[1] *Physical Education.* E. H. Le Maistre. Oxford University Press. P. 23.

[2] *Introduction to Physical Education.* E. W. Nixon and F. W. Cozens. W. B. Saunders Co. P. 66.

The immediate objectives are two-fold, but it must be emphasised that the relative values attached to the foregoing aims must vary with the individual point of view. To some, the development of physique and posture is a specific and immediate objective, but it is doubtful whether this really outweighs:

1. the improvement through practice of the specific skills under consideration; and
2. the attainment through these practices of enjoyment and a feeling of satisfaction.

The objectives of the P.E. Lesson or any other aspect of Physical Education will differ from those of Physical Education itself in the amount contributed to the various goals. Being but a facet of Physical Education its contribution cannot, or should not, be so great as the sum total of experience in the whole vast field of physical activity. The freer form of the lesson today, the wider range of games skills included, the greater emphasis upon Part II, should enable a greater measure of effect to be made upon the physique and upon the personality. However, the P.E. Lesson is not a substitute for P.E. in its wide aspect, neither can it serve the adolescent physique nor make its contribution to the development of mind and personality to the extent that a wide range of differing physical activities, properly taught, can do. For this reason it is wrong to talk as though the Physical Education Lesson were synonymous with Physical Education, or that what separates the two is a mere distinction without a difference.



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II

The Physical Education Lesson and Recent Influences

SHORTCOMINGS OF THE FORMAL LESSON

OF recent years there has been a growing feeling that what might be regarded by some as the orthodox and by others as the traditional type of Physical Education Lesson is inclined to be too rigid, following too fixed a pattern. It was often the case that the form and material of a lesson were prescribed, while experiment tended to be stultified by the procedure of the day that demanded careful grading of exercises with regular and automatic introduction of new ones and the preparation of lists of preconceived coaching points. Emphasis was placed upon order, work in unison with the application of command-response methods, and the whole lesson was dominated by the static posture test.

Yet, this type of lesson in the hands of good teachers could be made energetic, purposeful, enjoyable and give valuable results. Moreover, its very inflexibility aided the less-competent type of teacher, who, by conforming to rules and regulations, was helped to achieve a degree of success which might not otherwise have been attained. However, the past success of such methods does not mean that other more fluid means could not be more successful, more desirable and more in keeping with modern educational principles. It can be said with some truth, that the old type of lesson was apt to become too stereotyped, being so carefully planned that spontaneity tended to be lost —even 'breaks', recognised as necessary to infuse life into the lesson, were allocated their prearranged places instead of being introduced spontaneously as suggested by the general trend of the lesson.

The standardised lesson compounded from other people's books of tables reflected an attitude that implied the existence of 'a' way of teaching and 'a' type of lesson suited to all sorts and conditions of children. There can be no standard formula or mass production method that can be applied to a vast variety of children with their differing backgrounds, taught under varying conditions by teachers who, we trust, still retain their individuality. Where there are so many variables no rigid method of teaching, no list of 'dos' and 'don'ts' can guarantee a successful lesson. It is a common experience for a lesson successful on one occasion to be less so with a parallel class, although, perhaps because, the lesson is identical. In no other subject in the school curriculum is it supposed that the teacher should do otherwise than compose his own lesson.

Hints emphasising the separate qualities that make up the successful teacher and the competent lesson may be given to the inexperienced by the experienced; but it must be realised that after too thorough a degree of analysis the rebuilding process does not invariably produce the desired result. The whole does not necessarily represent the sum of the parts. In certain circumstances most people can be briefed to produce a lesson with plenty of activity and enjoyment; but the 'good' teacher achieves more than that, leaving the class generally, not just one or two natural athletes, more skilful than before.

There is every need for careful preparation—for only by forethought can inexperience be counterbalanced. The great need, however, beyond the careful selection of suitable material is with regard to the organisation of the apparatus and of group work. With developing experience and confidence the student should be able very rapidly to dispense with long lists of prepared coaching points. Not that he should ever do otherwise than familiarise himself with the feel of the exercises and activities chosen and think of the best means of securing their successful performance. What should be avoided is an outpouring of a rehearsed patter of coaching points, a mixture of trivialities and fundamentals which bewilder rather than help. Bartlett,[1] in dealing with skills, speaks of a key movement which, if mastered, brings into play without conscious effort the rest of the desired pattern of movement. The key, he emphasises, varies with the individual differences of bodily build and bodily mechanics, and although he is dealing here with a high level of skill performance, it does emphasise the necessity for appraising efforts individually and through direct observation rather than collectively and mechanically.

COACHING AND CORRECTION

Coaching and correction should be based upon observation, personal observation, and largely upon the observation of the moment. Up to a point it can be expected that the faults of individuals will be repeated in the group, in which case individual instead of group correction would be so much wasted effort. Taking the individual case, the teacher may legitimately generalise for the benefit of all. But it is wrong to tackle a lesson with a fixed determination to make various coaching points—such a resolve invariably results in the discovery of the expected. Every teacher should have a knowledge of fundamentals, know what is being looked for, but nevertheless his coaching should be less the result of anticipation than of the observation of the moment.

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[1] *The Measurement of Human Skill.* F. C. Bartlett. Journal of Industrial Psychology. April 1948.

In order to observe acutely and see the class as a series of individuals, the teacher must have opportunity and freedom from distractions. He must, within the limits of common sense, be prepared to stand aside and allow the children 'to have a go', to try out uninterrupted movements or skills, standing by for one another and correcting mistakes among themselves.

If the class is not to be forced along, willy-nilly, at a predetermined pace, in a prescribed manner, to a prearranged goal, then the teacher must regulate progress to his observation of what the children are actually—not theoretically—doing and must be prepared for the possible introduction of a degree of improvisation involving, perhaps, abandonment or adaptation of the prepared plan in order to foster an interest that has spontaneously arisen. Occasionally, the teacher must be willing and able to go off at a tangent and follow an unexpected trail.

But, as with all techniques, this too may become a stunt, a fashion to be followed slavishly, even prepared for. It can be abused by too enthusiastic adoption, with the result that effort becomes dissipated and objectives rarely achieved and seldom consolidated.

It might be suggested, then, that in order to facilitate observation by the teacher, enabling coaching to be more effective in that it is the result of first-hand observation rather than premeditation:

1. children should be allowed scope to practise, enjoying some freedom from interruption to enable them if possible to correct mistakes for themselves;
2. children should be allowed scope for some degree of experiment and invention (especially the younger ones);
3. children should be allowed scope for some preferential practice.

All three points are subject to the exercise of common sense, and care must be taken to ensure that so much scope does not provide opportunity for setting up wrongly conditioned reflexes through the incorrect practice of skills or increase the risk of accidents.

The Problem of Teacher-domination

On the whole, the observance of these three freedoms should make for quieter and more effective teaching. Maybe the emphasis upon plenty of class stimulation, involving great expenditure of nervous energy, was necessary in the past because there was less satisfaction of the real needs of the children and more giving of what was felt to be good for them. Perhaps a more careful selection of material drawn from a wider variety of sources will result in less need for excessive 'stimulation'. Lessons can be needlessly dominated by the teacher, often with a stereotyped patter of mass directions and routine exhortations.

Of course, it is merely stimulation for the sake of stimulation and over-anxiety on the part of the teacher that should be discarded, for encouragement should be applied as needed and not as a matter of routine. In this way its effects will be enhanced and activity will not be held up by the stressing of the non-essential, children will not be frustrated by teacher-interference making coaching points that anticipate what the child might very well discover for himself. The result should be a lesson in which the part played by the teacher is effective yet as unobtrusive as possible. But in no circumstances is less obtrusive teaching synonymous with loss of class-control. There are times when domination by the teacher is essential, and before freer methods can be employed, the teacher must be satisfied that his class control is sufficient to allow him to retire more into the background. It is a challenge to the teacher's ability.

Command-response Methods

In the past the Physical Education Lesson, evolving from the gymnastic type of lesson, has been characterised by movements and skills performed in unison, conducted and controlled by a series of commands. Commands, once the lingo was mastered, were concise and explanatory, but movement was prohibited until—after a significant pause—the executive word was given. This was, and is, a very sensible and sound method. The language is standardised so that the class need not be inconvenienced by a change of leader. The form of the command, although stereotyped, could be used with a surprising degree of inflexion. Variations of pause, whereby a class strained at the leash waiting for the release, could become of great significance. Pains were taken to dissociate such commands from their military counterparts on the parade-ground, and, by and large, few would deny that such methods well employed can reveal distinct advantages. Brevity is combined with lucidity, restraint serves only to enhance anticipation and there need be no flavour of military squad-drill.

However, the increasing introduction of informal movements, free practices and objective exercises has caused command-response methods to lose much of their value. Whereas such movements as trunk bending down are easily commanded, especially when performed in class time, a similar movement that involves the passing of a bean-bag through the legs to a partner, and over the head and back again, is less easily adapted into a formal command. The simpler solution is to combine a demonstration with a conversational description and allow free practice directly the idea is grasped. With the abandonment of a large amount of work in unison, command-response methods cease to have point.

It seems difficult to see anything heinous in the past use of such methods, but in certain circumstances it seems a less successful means than a more informal conversational one. Like most unstereotyped methods, the onus is placed upon the individual. The gifted should be able to rise higher because of their freedom, but with others a basic training in command-response technique is necessary to encourage the effective use of the voice and the cultivation of a brisk business-like manner. There is no virtue in adopting a conversational manner which is prosy, muddled or uninspiring in delivery.

TEACHING TECHNIQUES

Teaching technique is largely an individual and personal skill that is acquired and modified in the light of experience and experiment. It should always be developing, and no teacher should reject new methods out of hand without a fair trial and a genuine attempt to understand what are the underlying principles. However, no teacher should be expected to be false to himself and adopt methods in which he cannot sincerely believe. In the light of experience and knowledge of his own ability, each individual has to make his own personal compromise and modifications and this results in a technique that is the expression of part of himself. He is not required to act a part, to behave like somebody else or to ape mannerisms foreign to his personality. A phlegmatic type of person cannot successfully pretend to be excitable and volatile, and should not attempt the deception.

Likewise it seems unreasonable and undesirable that anyone trained and experienced in command-response techniques should adopt overnight a conversational method merely because the latter has been found to suit others. What is reasonable to expect is that the experienced teacher will be prepared to give other methods a fair trial, and probably in the light of such experiment he will be disposed to effect a compromise, using a mixture of both—the one when using traditional exercises in class time, and the other for more informal practices.

Work in Unison and Free Practice

Excepting the organised athletics of Ancient Greece Physical Education as a study and a cult is a recent development dating largely from the 19th century. Various fashions and systems have developed and flourished, varying according to national characteristics, since a system rarely survives transplantation in the same form for long. To prevail, a system has to look attractive, command attention and impress, and this may in part account for Scandinavian, and until recently our own, preoccupation with performance from the display angle. Work in unison, work of a rehearsed nature, work involving not merely skill but all the precision and accuracy of a 'corps de ballet' or a Tidworth Tattoo, these are the means of impressing the uninitiated. Only the trained and knowledgeable are apt to be less impressed by excessive attention to the showmanship side and can appreciate the value of what is going on when a whole class practise different skills at one and the same time.

During the 1930s, having more or less 'bought', lock stock and barrel, Scandinavian gymnastics, we naturally tended to hang on to the showmanship side, perhaps not realising that it was in fact mere showmanship but imagining in our enthusiasm that the order and precision involved had some strange effect upon character training. A good deal of posturing which certainly looks impressive and is very photogenic is now appraised at nearer its true worth. Undue obsession with performance in class time is apt to relegate to second place the gaining of the maximum effects of the movement. A class is but a collection of individuals of varying sizes and of different degrees of suppleness. This is especially true of children during adolescence. How can all arms be expected to perform the same movement, describe the same arc, move at the same time, through the same distance, and yet produce the maximum effect in every instance? Suppling work in particular should be mainly the result of individual practice in individual rhythm to enable the full range of the movement to be reached by all.

However, there is a distinct satisfaction to be gained from team work, and one aspect of working as a team is through working in unison. Team games differ. Through the performance of some games, despite the different functions of the team-members, a strong feeling of 'esprit de corps' can be built up. In other sports, such as rowing, each individual may be the more easily welded into one identity, working, pulling and thinking as one person through the performance of the same function at the same time. Again it seems reasonable to suppose that there should be some scope for a class to work together in common time. Girls are to a certain extent catered for in this respect in their National Dancing, when an imposed rhythm is adhered to. Normally boys are denied this satisfaction. The inclusion in a lesson of a few gymnastic exercises of traditional type can satisfy that need without, as we know from past experience, an undue sacrifice of effort or effect. The growing novelty of such opportunities in contrast with so much free practice may cause added interest on the part of the class.

Objective Exercises

It is educationally wrong to consider the child as a diminutive adult or to conclude that, as such, his likes and dislikes, needs and requirements are diluted adult ones. It is more true to reverse the process of thought and think of the adult as merely an enlarged child still cherishing certain childlike propensities with all childish things not yet put away. The 'new look' in Physical Education owes its development to the second process of thought rising in protest against the former. The movement has come from below, from the Infants' School with its emphasis upon free-play, experiment and guidance instead of teacher-domination. The effects spread upwards, affecting the methods and work, in fact the whole attitude towards Physical Education lessons in the Primary Schools; and its effects, somewhat diminished, have been apparent in the work in the gymnasia of the Secondary Schools.

After the hazards and adventures of the Essex and Bristol Climbing Apparatus, the standing-broad jumps of the traditional '33 Syllabus type of lesson must inevitably fall flat. Naturally work in the Primary

School was influenced by experiments below. The enthusiasm for climbing led to the development of frames with added height for Junior work. The dawning competitive spirit of the post-infant years suggests the need for greater vigilance and safeguards against accidents, but new life has been infused into Primary work. As climbing apparatus is expensive and rarely provided on a scale sufficient to employ all the class at once—not that this would be desirable in the interests of ball-training and all-round development—the problem is to invigorate other aspects of the lesson by improvisation, experiment and invention.

There is nothing new in the objective exercise. The medicine-ball in the Secondary School is but the counterpart of the bean-bag in the Junior. What is new is the emphasis upon them in Primary work, the ingenuity exercised to employ readily available articles in other than customary ways. Hoops, bean-bags, ropes, balls, tins all became indispensable to the Junior Lesson. In order to produce a desirable movement, abdominal or lateral, etc., the child may be required to achieve the effect through tossing a bean-bag, picking it up with the feet, or through the manipulation of a hoop.[1] Some movements, performed more in the interests of general exercise, hardly lend themselves to the normal classification, while others can still be hung on the traditional pegs.

Like all good ideas they can be exploited and abused. One can go to absurd and unnatural lengths in order to make an exercise objective. Too much emphasis upon objectivity may result in a loss of quality of movement. But obvious drawbacks of this nature, despite their foundation of truth, cannot alter the fact that life, freshness and reality have entered the P.E. Lesson of the Primary School as a result of the introduction of objective exercises.

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[1] See *Suggestions for the Use of Small Apparatus in Physical Education*. I. Munden. Ling Physical Education Association.

Furthermore, repercussions have made themselves felt higher up. The wholesale adoption of objective practices in Junior work prompted the abandonment of command-response methods and caused the development of a new technique. What suits children in the Primary School will not in its entirety suit older boys, but the process of graduation to more systematised methods must be gradual, necessitating in the Secondary School an understanding of the methods, aims and techniques of what has happened below. This process of familiarisation invariably claims its converts.

INFORMALITY

The word 'informality' can be used to sum up much of the teaching method in vogue today. The degree of informality varies with the ages of the children—often too with the age and adaptability of the teacher, and according to his individual attitudes and abilities. Informality is a means and not an end. It is a means of achieving results, a better aid in capable hands than the more formal methods of yesterday. It is a challenge to the teacher, but it must always be remembered that the mere adoption of a new technique is not the whole answer. With it must be fulfilled a variety of objectives:

1. Vigorous exercise.
2. Acquisition of an increasing variety of skills.
3. Enjoyment and satisfaction.
4. Balanced development of physique.
5. Scope to express personality.
6. Scope for the development of social and sporting attitudes.

Methods that are too formal and rigid must restrict to some degree the optimum measure of success.

The ingredients of informality may be classified as:

1. Emphasis on the individual practices—abandonment of much work in class time, of waiting turns, etc.
2. Conversational methods superseding to a large extent those of command-response.
3. Less attention to small isolated movements in the interests of general exercise.
4. Abandonment of the routine use of class formations, much work in four lines giving way to free spacing, etc.
5. Provision of opportunities for experiment
   for preferential practice
   for self-correction.
6. Guidance rather than domination by the teacher —unobtrusive teacher-control.

The list of objectives to be achieved are all related, and one cannot be attained without some effect upon another. It is through physical exertion exercised in the acquisition of a variety of skills that contribution is made—over a period—to a balanced physique, and more immediately, that enjoyment and satisfaction result. However, the opportunities for self-expression and the provision of scope for the development of social attitudes also make for satisfaction and enjoyment, and it is through the exercise of skills that self-expression results and that opportunities for social training occur.

THE THEORIES OF PLAY

The term 'self-expression' is often bandied around vaguely, without a clear idea of its implications; but an acquaintance with the several theories regarding the nature of play helps to a better understanding.

The various play theories,[1] whether considered separately or collectively, do not give a completely satisfactory explanation. Few educationalists would accept play to be an *aimless* release of surplus energy; or that play is merely a preparation for certain functions to be performed more seriously later on in life—the child with a doll and the kitten with a ball of wool provide illustrations. Karl Groos's development of this 'preparation' idea stresses the educative side of play in youth, not as a training for something specific, as in the case of the child with a doll, but as a general basic training resulting in the development of motor-skills and physique, and without which both mental and physical capabilities would be retarded.

As a statement of fact the 'recreation' theory passes unchallenged but explains little. Without doubt modern society does demand of us fussy movements of delicate but small coordinations involving monotonous repetitions, eye-strain as well as abstract thought, tiring processes that are comparatively recent characteristics of Man's progress. Consequently, play often tends to take a form involving large-muscle-group action, providing refreshment and relief through those simple and ancient activities involved in the field pursuits, sports and games.

However incomplete the answer seems to be, whether in play the progress of the Race is re-enacted, the ordered stages of animal, savage, nomad and tribal; or whether play is regarded as a 'safety-valve', a safe means of blowing off pent-up emotions; or merely as a means of sublimating urges that might otherwise provide embarrassments to society; whatever the answer, the fact remains that children still insist upon playing, preferring activity in play to the inactivity of rest. When tired of one game, a new one is taken up with a vigour renewed.

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[1] *Theory of Play.* E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. Pp. 63–101.

Play and Self-expression

By nature the healthy child is normally active, and the form his activity takes is going to be determined in the first place by his physical make-up. Just as a dog will chase its tail, bite and bark, so will the child indulge himself according to the potentialities of his own physical structure that permits running, jumping, throwing, striking, kicking and the like. Health and physical fitness will influence the play form to some extent, and even more so, environmental factors will play their part in the development of both mental and physical attitudes. It is not doubted that play results from innate promptings, but its form must be conditioned to a large extent by the physique and fitness of the individual, and such factors as the facilities and opportunities present, the traditional pursuits of the immediate environment and the presence or otherwise of companionship.

Whatever long term measures of preparation are served through play, the child and adults seek some immediate and personal satisfaction from it, often a satisfaction which is not to be derived to the same extent from the daily occupation, whether it be in the class-room or at the factory bench. Through play a child may expect to achieve a sense of physical accomplishment and of progress, an expression of success in overcoming difficulties that involves appreciation both by the individual concerned and by others.

In the P.E. Lesson, where play is less spontaneous, through over-organisation or through the overwhelming considerations of class-management, the child must not be robbed of his opportunity for self-expression. Games must be chosen and presented so that they are vital to the children. Skill-drills must be linked with the ultimate game in mind so that the object of the exercise is self-evident and that true progress can be measured. Scope must be provided for a sensible amount of uninterrupted practice, while coaching must be individual and effective—not degenerating to mass exhortations. Opportunities must be provided for the measurement of success and the recognition of improvement, both by the individual and the class generally, remembering that a sense of accomplishment is not achieved solely, in the case of competitive contests, by winning and that over-recognition of success and undue stressing of this side may result in exhibitionism.

Some degree of informality in approach seems essential if scope for self-expression and all it implies is really going to be given in the P.E. Lesson. To some the term 'self-expression' may seem too grandiose a phrase when bearing in mind the elementary standard of skill level often involved, and might seem as incongruous as 'self-expression' through music being achieved by five-finger exercises and scales. But the comparative low-level of skill relative to adult standards does not necessarily deny a very real degree of self-expression so long as the lesson is not composed, as it often used to be, of a series of drills that must have seemed quite meaningless and lacking in spontaneity to the child. Presentation and selection of material in accordance with the play interests of the child is all-important, and, within limits, who is better qualified for this function than the child? Some degree of co-operation between teacher and class, some degree of self-selection by the children are necessary if play is going to be at all spontaneous. Only so can the P.E. Lesson provide a means of satisfying the innate play characteristics of the child,[1] which vary according to age, development and sex, and according to the influences of various environmental factors. For example, in the Primary Lesson the emphasis may well be upon games that involve individual rather than team competition, because the tendency of the Junior School stage may be roughly classed as 'individualistic', although not in an anti-social or solitary sense. Within certain limitations the child should be provided with the means of giving vent to the self-assertion that is a play characteristic of this stage of development. In the Secondary School stage, however, the child should be helped to derive an increasing satisfaction from team play, with a consequent tempering of an individualistic attitude and some subordination of self in the interests of team play.

[1] *Theory of Play.* E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. P. 173.

III

Physical Education and Gymnastics

JUSTIFICATION OF THE P.E. LESSON

THE Physical Education programme in schools can be defended in terms of social, leisure and character training, but one of the main reasons for its existence is that it is calculated to assist in the building of a sound physique. Gymnastics is a part of Physical Education that is exclusively concerned with body-building, and its justification rests upon the fact that a sedentary life is so inseparable from civilisation today that as a result certain parts of the body may be largely neglected, even in the games-player.[1] Steinhaus's 'over-load' principle stresses that the development of strength depends upon muscle work against increasing resistance, and so it can be seen that ball-games which depend chiefly upon timing and a fluent coordination are not so apt to develop appreciably fresh strength as merely to make use of strength that already exists. The considerable number of repetitions of a movement that might be involved would be more concerned with muscular endurance than with strengthening. Furthermore, these very repetitions may, for example, unduly exercise a muscle group so constantly through its inner-range that a limitation of joint mobility results. Therefore, it can be argued that Physical Education is not necessarily enough unless some form of gymnastics is included as well.

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[1] *Kinesiology*. Leon Kranz. C. V. Mosby Co. Pp. 12–13.

Gymnastics are invented or prescribed movements of trunk and limbs designed to create strength or induce suppleness and so influence the development of physique and carriage. In the past there is little doubt but that the posture 'bogey' resulted in Gymnastics unduly dominating the whole of Physical Education, but today the attempt is to obtain similar or better results through more positive methods, through the performance of a variety of physical skills and a wider and more adventurous interpretation of Physical Education. However, this is not to exclude gymnastics entirely, for it must be remembered that despite his youth and vigour, the schoolboy must be classed as a sedentary worker, and therefore in all probability in need of some strengthening, especially in the arms and abdominals, and for some suppling in such joints as those of the spine and the shoulder.

The P.E. Lesson and 'Posture'

Despite the modern shift of emphasis in the P.E. Lesson from the 'form-giving' exercises of Part I to the skill practices in Part II, a third or more of the lesson is still usually devoted to this type of work, although maybe in a disguised form. Shorn of its display 'attitudinising', Part I still serves a three-fold purpose, namely

1. to limber up,
2. to supple,
3. to strengthen,

although too often an undue fear of strain has resulted in perspiration and suppleness being induced at the expense of strength. However, a third or more of a lesson is directly concerned with 'Posture' through attention to 'all-round' development—suppling joints and restoring tone to neglected muscle groups.

The problem of what is 'good' posture is discussed elsewhere, but in passing it can be stated that posture involves the alignment of body segments,[1] and the erect position is maintained only by withstanding the pull of gravity. Loss of muscle tone and of muscular balance may result in mal-alignment due to segments giving in to gravity, and with certain types of mal-alignment goes possible organic displacement. The problem is not made easier by the general inability to define the range of normality in carriage, and assess to what extent variations in posture may legitimately exist at different ages and in different physical types.[2]

THE CAUSES OF MAL-POSTURE

Mal-posture may result from one or more of such causes as:

1. disease or malnutrition;
2. the effects of prolonged physical inactivity;
3. the occupational or recreational effects of a specialised type of activity;
4. the slighter effects of inactivity or of a specialised form of activity.

The first three named are out of the province of the normal teacher of Physical Education, who is merely concerned with the prevention and possible counter-effect of the last named, together with the diagnosis of symptoms warranting individual treatment at the clinic.

Thus, the teacher's concern for the development of a reasonable posture and physique leads him to try to effect this in some degree through gymnastics, by suppling and strengthening the body generally, with special attention to neglected parts.

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[1] *Kinesiology.* K. F. Wells. W. B. Saunders Co. Chapter 17, 'Postural Skills'.

[2] Cf. the Roper Report on *Some Aspects of Physique in Boys and Girls.* Ling Physical Education Association.

However, undue preoccupation with correction is to interpret Physical Education negatively instead of positively, and it must be emphasised that even in the P.E. Lesson, despite its gymnastic foundation and direct concern with body-building in Part I, time and attention are normally focused to a greater extent upon Part II, where general exercise is obtained through the practice of skills related to all sorts of aspects of Physical Education.

Gymnastics, then, are a means of:

1. raising muscular temperature in preparation for strenuous exercise;
2. strengthening neglected parts, or increasing strength needed for specific purposes, e.g. field events, etc.;
3. retaining mobility in joints;
4. restoring some mobility to joints;
5. rebalancing the habit length of opposing muscle groups.

Briefly, gymnastics may serve to strengthen or to supple, in the first place by inner-range concentric and eccentric muscle action, and in the second through similar action through the outer-range.[1]

STRENGTHENING WORK

There has been a tendency to emasculate gymnastics of this important aspect of its work. The finding of the Lincoln School Experiment [2] was mainly upon suppleness. The tremendous pre-war enthusiasm for certain aspects of Danish Gymnastics and the accompanying revulsion against the dumb-bells, club-swingings, rings, horizontal- and parallel-bar work of German Gymnastics may have caused this, resulting in boys being served with such exercises as '(Bk. Ly.) Alt. Kn. rais.' under the pretence of strengthening abdominals! The extent and place of Turnen work in schools may be limited, but on the face of it, for example, there seems little point in not including some club-swinging, perhaps as a Group Activity, especially in view of the neglect that the wrist suffers in the normal P.E. Lesson. It is interesting to note that the use of weights, a pursuit scorned until recently as an example of mis-applied exertion belonging only to phoney systems of quacks and professional strong men, is receiving recognition now in the adult athletic world. Yet it is merely a practical and obvious application of the 'over-load' principle.

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[1] *Anatomy and Physiology for Students of Physiotherapy.* C. F. V. Smout and R. J. S. MacDowall. Edward Arnold & Co. Pp. 318–320.

[2] *Experiments in Homework and Physical Education.* A. Sutcliffe and J. W. Canham. John Murray.

Admittedly the acquisition of muscular strength is not to be regarded as an end in itself, but merely as a means that can be applied to other ends, and care should be taken when strength is being deliberately acquired for some specific task, that the rest of the body is not neglected. This is one of the charges that has caused the eclipse of Turnen in this country.

A muscle responds to work by an increase in size and efficiency due to the toughening and thickening of the connective tissue within the muscle, an increase in size of undeveloped, neglected muscle fibres and an increase of the blood supply by an increase in the numbers of capillaries serving the muscle. The actual number of fibres remains constant. The efficiency of the muscle increases with training, but the amount and rate of increase vary with the individual and his somatotype.[1]

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[1] *The Physiology of Muscular Activity*. E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. Pp. 21–24.

SUPPLING WORK

Joint mobility is best retained by the regular exercise of joints through the limits of their range of action, unless this has already been reduced through previous continued use through less than the maximum range—in which case a shortened muscle habit length may have restricted full movement. Examples of the occupational loss of suppleness through such repetitive activity is to be seen in gardeners and carpenters. Less obvious but even more general is the loss of stretch-length in the ham-strings through sedentary pursuits, or the general inability to achieve the gymnastic position of 'Arms upward stretch' by the non-gymnast. Such slight losses of suppleness as the two last named seem to exercise little or no handicap as far as the pursuits and postures of everyday life are concerned, and it may seem that everyday life, in adapting structure to function, has created a demand for a reconsideration of what may be regarded as the range of normality in certain joints.

JOINT ACTION AND THE 'STRETCH' REFLEX

However, despite a tolerant attitude towards a certain loss of flexibility, to prevent further loss or to restore a mobility where a marked deficiency occurs the teacher comes up against the problem as to the means whereby this may be effected, and whether the P.E. Lesson offers scope for work that is more corrective than preventive. Matthias Alexander, whose scorn for existing methods of Physical Education is so much more lucid than his camouflaged explanations of what he would substitute, says 'and we are actually asked to believe that muscular tension, exercised for a comparatively short space daily by people whose habitual use is so defective that they are in need of help, will counter the general wrong functioning which is due to a misuse that is operating against them all day long'.[1] Also, there is always the danger that by attention to parts instead of wholes, by curing certain conditions others may be substituted.[2]

While conceding some truth to these points, let us examine the means by which suppling can be induced by gymnastics, and how it can be best effected. It is a known physiological fact that a muscle contracts more strongly after stretching. In fact, the reflex effect of a sudden or slight stretch is to stimulate an increase of muscle tone. The 'stretch' reflex forms the basis of the postural reflex whereby proprioceptive stimuli counteract the effect of gravity in the anti-gravitational muscles.

Thus, before a muscle can be lengthened the 'stretch reflex' has to be overcome somehow, for, despite the Webber Paradox,[3] it is obviously undesirable to indulge in a muscular tug of war that can only result in injury. Care has to be taken by the slow application of sustained pressure to avoid initiating protective contraction.

This pressure may be exerted either by another person, the subject remaining passive and relaxed while his limbs are manipulated for him, by the use of gravity or by the conscious contraction on the part of the subject of the opposing group to that which is to be stretched. The external application of pressure characterises 'passive' stretching, while 'active' stretching implies that the stretching effect has been caused by the subject's own muscular exertion.

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[1] *The Universal Constant in Living.* Alexander. Chaterson. P. 54.

[2] *Ibid.* P. 57.

[3] *Anatomy and Physiology for Students of Physiotherapy.* C. F. V. Smout and R. J. S. MacDowall. Edward Arnold & Co. P. 320.

PASSIVE STRETCHING

Despite its apparent successful exploitation by Neils Bukh, the use of 'passive' methods is suspect. There is doubt whether it has a legitimate place in class gymnastic practice. It seems to belong more happily to the clinic of the physiotherapist with trained individual application for specific cases. Furthermore, this method demands a high state of voluntary relaxation —a more complex business than the common gymnastic stunt of 'going floppy' suggests, and one hardly suited to class methods of instruction.[1] Therefore, it would seem that, under class methods where the application of pressure is by another member of the class, passive stretching is more liable than not to result in strain due to misapplied force against a muscle in which considerable tone exists.

It might appear that a muscle could be more successfully stretched by 'active' means, the desired absence of tone being secured by 'reciprocal innervation'.

ACTIVE STRETCHING AND RECIPROCAL INNERVATION

A joint is moved by the action of opposing muscles or groups of muscles. The one cannot work without the automatic relaxation of its opposite number. If a muscle is to be stretched by contracting its antagonist, 'reciprocal innervation' will have secured the necessary state of relaxation. Reciprocal innervation can be inhibited voluntarily as in mime movements, when strong effort is simulated by the action of groups pulling against antagonists which have not been reciprocally innervated. These so-called 'strong' movements are hardly liable to develop increased strength, because the resistance offered is 'cooked' to some extent. Doubtless it serves to keep a muscle toned up, and to suggest, as it is intended, effort for the purposes of mime and dance.

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[1] *Relaxation.* A. D. Munrow. Physical Education Journal. March 1949.

However, 'active' stretching makes use of relaxation provided by reciprocal innervation. Furthermore, if the contraction is slow and deliberate, strong and sustained, the 'stretch reflex' will not be stimulated.

Additional help may be brought to bear by the use of some momentum or gravitational assistance, as long as the tempo is slow and sustained. Obviously, momentum and force should not be used upon a contracted or semi-contracted muscle, despite the protective elasticity inherent in a contracted muscle,[1] but the repetitive stretching involved in the rhythmic performance of an exercise increases the elasticity of the muscle. Thus, it seems reasonable to assume that the basis of 'active' stretching should be first and foremost by concentric muscle action within the opposite muscle's inner-range, and assisted only in a subsidiary degree by momentum and swing.

For example, 'shoulder-stretching'—(Asd.—Tr.F.—Am.U.—Wrst. Rst) Tr. press. d. (Wbs)—depends not so much upon using momentum and gravitational pull upon the inclined trunk, as upon the conscious squeezing together of the shoulder blades by the strong and deliberate contraction of the trapezius and the rhomboids and contraction of the posterior portion of the deltoid, plus only a subsidiary amount of leverage upon the anterior portion of the deltoid, the pectorals and latissimus dorsi deriving from hip-flexion when the wrists are fixed. Above all, the movement must be slow and sustained, protecting the pectorals, etc., from anything resembling sudden jerks.

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[1] Known as 'Webber's Paradox', see *Anatomy and Physiology for Students of Physiotherapy*. Smout and MacDowall. P. 318. Also *The Physiology of Muscular Activity*. Schneider and Karpovitch. P. 11.

Where 'passive' stretching by itself can only result, if successful, in alteration of the stretch length of a muscle without any corresponding 'toning up' of its antagonists 'active' stretching serves the double purpose of readjusting an over-short habit length with the simultaneous strengthening of its opposite number.

SUMMARY OF SOME OF THE PHYSICAL PROPERTIES OF A MUSCLE RELEVANT TO GYMNASTICS

1. A muscle is elastic, with a determined 'habit' length to which it normally returns after contraction and extension.
2. The efficiency of muscular contraction is increased by—
    - *a*. previous stretching—the taking up of slack, and
    - *b*. raised body temperature.
3. A contracted muscle is surprisingly elastic—a protective mechanism against sudden exertion, which becomes less effective with age. This is known as 'Webber's Paradox'.
4. Sudden and slight stretch initiates the 'stretch reflex', an automatic muscular contraction protecting the joint from strain.
5. 'All or None' Law—a muscle fibre contracts 100% or not at all. Effort is graded in proportion to the job in hand by varying the number of fibres stimulated.
6. 'Over-load' Principle—an increase in strength is secured only by an increase in work. Repetitive work develops muscular endurance, while light work is a means of speeding up the rate

of contraction. The rate with which optimum strength is realised varies according to the somatotype.[1] Conversely, it would appear that a muscle possesses an optimum stretch-length which would vary according to the somatotype and the shape and type of muscle. Because of this, it would seem that some stretching exercises are ill suited to mass methods of instruction; for physical reasons athletes of some builds will never make hurdlers.

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[1] *The Physiology of Muscular Activity.* E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. P. 22.

IV

Some Modern Attitudes Towards Posture

EVOLUTION AND THE ERECT POSITION

MOST anthropologists are agreed that both Man and the Ape derive from a common ancestor of tree-climbing habits; but the cause of eventual progression to an erect stance and what prompted the cultivation of a preference for the ground instead of for the tree-tops is open to some speculation. It seems less than likely that violent climatic changes or forest fires could have robbed Man's ancestors of their trees without accounting for animal life as well. A more reasonable supposition is that, due to a development in size, arboreal life became somewhat precarious, whilst a proportionate increase in appetite was difficult to satisfy, so that the richer and more varied food resources of the ground may well have acted as a lure. A further belief, however, is that descent was made before any major development in size was effected, and Man's ancestors ran on all-fours 'insignificant in size and monkey-like in posture. Until they got their hands so filled with food, weapons, or mischief that they had to stand up and walk on their hind legs'.[1]

Maybe such issues are irrelevant so far as Physical Education is concerned, and it may just be accepted as fact that at sometime, somehow, Man's ancestors attained an erect position from a semiquadruped stance—a change associated with many modifications of the body due to the endless process of adaptation of structure to function.

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[1] *Up from the Ape*. E. A. Hooton. Macmillan Co., U.S.A. Pp. 130–131. Dudley J. Morton (*Human Foot*. Columbia University Press. Pp. 34–38) argues that a vertically suspended posture was developed in a tree existence, which was later exchanged on the ground for a vertically supported one.

The biped stance, with the shifting of the centre of gravity upwards, results in an inevitable loss of equilibrium that is not completely offset by an increase in bone-and-muscle-size of the lower limbs. The prehensile foot, which is unfitted for both bipedal locomotion and the support of the whole body, is characterised by a marked inversion. The os calcis is more rudimentary, while the toes, partially flexed and longer than in Man, are well developed; the great toe that is able to work in opposition to the others, as a thumb does to the fingers, is normally carried at an angle to the axis of the foot.

The full effects of body weight would be to counteract the inversion of the foot with a degree of pronation, whilst the closing of the great toe as a preventive measure against stubbing would contribute to the buckling of the tarsals and the formation of the transverse arches. Disuse accounts for the degeneration of the other toes, but the great toe maintains its length 'because its base, together with the heads of the supporting first metatarsal, constitutes one of the main points of support of the foot'.[1]

The foot, then, becomes an organ of support and locomotion, with the tarsals no longer mobile like the bones of the wrist. The short muscles of the sole of the foot are little concerned with abduction and adduction, for 'few people can abduct the great toe, although the abductor hallucis remains a large and powerful muscle. The muscles of the sole are concerned with holding the toes firmly in apposition with the ground and propelling the body forward in walking. Since they span the pillars of the arch of the foot, they are powerful factors in its maintenance.'[1]

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[1] *Up from the Ape.* E. A. Hooton. Macmillan Co., U.S.A. P. 126. See also *The Human Foot.* Dudley J. Morton. Columbia University Press. P. 64.

It is interesting to note that if the arches of the human foot collapse under the combined effects of eversion and body weight, re-education is largely accomplished by the exercise of the foot once again as a prehensile organ.

Life in the trees must have been in itself some preparation for the descent to the ground and the adoption of an erect stance, for swinging by the arms involves the suspension of the body with the trunk in a vertical instead of horizontal position. In the quadruped the abdominal viscera is loosely anchored by mysentery and is held in place by the rib-cage, the abdominal wall and the pelvis. An upright carriage requires a closer knitting by mysentery of the abdominal organs to the walls of the abdominal cavity to counteract the slumping of the viscera. According to Hooton 'occasionally a human is born with a pronograde type of mysentery, and, in such persons, the bowel is likely to twist upon itself, causing obstruction'.[2] Hernia is another liability of the erect position. Increased strain is also thrown on the cardio-vascular system, as the major portion of the venous return has to be achieved against the pull of gravity. Fainting is caused by the reduction of venous return to the heart, but is quickly remedied by the assumption of a horizontal position which abolishes the effect of gravity upon the circulation.[3]

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[1] *Anatomy and Physiology for Students of Physiotherapy*. C. F. V. Smout and A. J. S. MacDowall. Edward Arnold & Co. P. 183.

[2] *Up from the Ape*. E. A. Hooton. Macmillan Co., U.S.A. P. 88.

[3] *The Living Body*. C. H. Best and N. B. Taylor. Chapman & Hall. P. 107.

Various bones and joints become more susceptible to injury—as the knee and the collar-bone. The curves of the vertebral column are the further development of standing upright. In quadrupeds the whole spine reveals a bow-like uniform convexity upwards, with a secondary cervical curve—as is produced in the crawling infant—to facilitate looking ahead. 'In the semi-upright Man-like Apes . . . the lumbar curve is probably less pronounced than in Man.'[1] Again, it is only after birth when the child makes the first efforts at walking and standing that this other secondary curve, in the lumbar region, develops.

These spinal curves, then, are the natural accompaniments of the erect position. A vertical line drawn from top to bottom shows the cervical and lumbar regions projecting in front and the thoracic and sacral regions behind.[1] On this mobile, jointed structure is not merely balanced eight pounds weight of head but is borne the weight of the rib-cage and that of the shoulder-girdle. The maintenance of the vertical position depends upon balance, the balance of opposing muscle groups to maintain the body's uneasy equilibrium against the persistent pull of gravity.

THE PROBLEM OF 'GOOD' POSTURE

Despite having enjoyed an erect or semi-erect position from, perhaps, middle Miocene times, Man and his ancestors have taken it very much for granted until recently. The growth of 19th-century Gymnastics, while arousing interest in the moulding of the human form, became associated with militarism, and inevitably the conception of the erect position became identified with the prevailing military stance. Since then, the educational gymnast has shaken himself free from military domination, and yet, although prompted by more functional considerations, has tended until recently to be static in his conception and remedial in his approach to 'posture'. The tendency has been to work back from a pathological condition, whether it be kyphosis, lordosis or scoliosis, and to say 'this is what happens unless . . .'

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[1] *Physical Anthropology*. E. P. Stibbe. Edward Arnold & Co. P. 80. See also Fig. 48 *Body Posture: Gorilla, Neanderthal and Modern Man. The Human Foot*. Dudley J. Morton. Columbia University Press. P. 100.

Moreover, the implication has been that there is a standard 'good' posture to which one must conform irrespective of age, size or build. In deploring certain environmental influences that might modify posture it is easy to lose sight of the fact that modification may also be expected due to varying limb proportions and varying distributions of bodily weight.[1] With further development of Sheldon's Somatotyping [2] we may expect more correlation between posture and the bodily type. Kretschmer's classification of physique into three categories, pyknic, athletic and leptosome, is an obviously undue simplification, as would be Sheldon's endo-, meso- and ectomorphic system without his means of appraisal on a seven-point scale. Karpovitch and Schneider [3] point out that of the 343 different physical types possible under this system, many exist only in theory, 'a man cannot be fat, muscular and skinny (777) at one and the same time, or have no fat, no muscle and not be skinny (111)'. But there are fifty or more recognisably differing types of physique, a fact that hardly suggests the existence of a common postural denominator for them all. Age, too, makes its influence felt, and the genu valgum of the infant cannot be viewed with the same concern as would be called for at a later stage of physical development.[1]

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[1] *Posture.* A. B. Appleton. Physical Education Journal. March 1946. P. 7.

[2] See Appendix A.

[3] *The Physiology of Muscular Activity.* E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. P. 284.

Admittedly it is possible to generalise, but only up to a point, indicating the desirability of allowing the line of gravity in the standing position to fall through the temporal bone, shoulders, hips, knees and just in front of the outer malleolus,[2] bearing in mind the mechanical disadvantage to which the feet are subjected if splayed out so that the weight of the body is not distributed over the whole foot, but falls mainly upon the vulnerable raised inner borders. However, it must be appreciated that the line of gravity only falls thus in a standing position, and 'posture means alignment of bodily segments. There are millions of possible alignments, as can be observed in a ballet dancer. It would be incongruous to judge the posture of a ballerina by examining her in one standing position. It is the opinion of the authors[3] that too much attention has been given in the past to the recording and improving of static postures.'

Perhaps it would be wiser to talk more in terms of 'efficient' rather than 'good' postures, as the latter suggests a standard type of bearing to which all must conform. Josephine Rathbone[4] emphasises how the term 'straight spine' has caused confusion, and she points out that degrees of spinal curvature may be expected to vary with the individual, and that some increase in all the curves of the spine does not necessarily constitute a defect. 'If the various masses of the body are balanced properly and if the abdominal musculature is taut, the spine with moderately increased curves may be considered normal and proper for some individuals. A great many sturdy manual labourers have such backs and may well be proud of them, for they are untiring and efficient.' [1]

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[1] *Growth and Development of the Young Child.* W. Rand, M. E. Sweeny and E. L. Vincent. W. B. Saunders Co. Pp. 140–141.

[2] *Kinesiology.* K. F. Wells. W. B. Saunders Co. P. 353.

[3] *The Physiology of Muscular Activity.* E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. P. 289.

[4] *Corrective Physical Education.* Josephine Rathbone. W. B. Saunders Co. P. 104.

POSTURE AND CORRECTIVE EXERCISES

Although Schneider and Karpovitch suggest that the relationship between postural deviations and ill-health is not as marked as is commonly believed,[2] no one can deny that in certain cases such a relationship can be established and does exist. The deviations may be environmental, congenital, due to disease or to a combination of all three. It is, however, only with or in anticipation of the early stages of the first named that the teacher of Physical Education attempts correction in the normal lesson. Of late, criticisms of the wisdom of this procedure have been made. 'Much of the so-called corrective work is not acceptable. Common errors are the attempts to correct individual defects of a large group in class work.' [3] While admitting the existence of some truth in this statement, it can be argued that 'the defects of a group of schoolboys tend to be a group defect—boys being subjected to roughly the same external factors'.[4] However, whilst allowing that corrective exercises may, in certain circumstances, be employed advantageously under class conditions, some critics may doubt if the usual allocation of time for the P.E. lesson and the number of periods per week are on a generous enough scale to allow an adequate number of repetitions for correction to be effected. Would not the time be better used by giving more attention to exercise generally than to exercises?

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[1] See also *Principles of Physical Education.* Jesse F. Williams. W. B. Saunders Co. P. 77. 'Within wide limits variations of the Spine may be considered normal.'

[2] *Physiology of Muscular Activity.* P. 289.

[3] *The Principles of Physical Education.* Jesse F. Williams. W. B. Saunders Co. P. 253.

[4] *Physical Education and Youth.* A. D. Munrow. Journal of P.E. and School Hygiene. March 1941. P. 26.

POSTURE AND PHYSICAL EDUCATION

The erect position is maintained by the tonic contraction of the extensor or anti-gravitational muscles of the body. The stretching effect of the gravitational pull on the extensor muscles initiates proprioceptive stimuli that result in a compensating increase of tone.[1] But the postural reflex can be conditioned. Appleton maintains that weak muscles give in, not so much to the pull of disproportionately strong antagonists—as is popularly supposed to be the case with the sedentary worker and his shortened pectorals—but to the influence of gravity. Everything we tend to do is in front of the body; the habit length of muscles becomes conditioned to sitting bowed over desks; the habitual inclination forward of the head, with the help of gravity coupled with disuse of the back extensors, increases the thoracic curve. 'The feeble use of muscle leads to postural modification under the influence of gravity, and the secondary changes gradually come about from lengthening of the neglected muscles and shortening of their antagonists.'[2]

But posture is more than a mere physical condition. It is also to some extent a reflection of moods and emotions, indicating attitudes not only of body but of mind. 'Joie de vivre' leaves its mark upon muscle tone, just as do gloom, depression and despair. Happiness and enjoyment through a wide range of physical activities seem, therefore, all important to the development of an erect, extended physique, and it seems reasonable to suppose that, excluding postural deviations through disease, malnutrition and general debility, minor deviations are unlikely to affect to any measurable degree organic fitness or to constitute any physical handicap of a general nature provided the body is regularly employed in a wide range of enjoyable bodily skills. A slight loss of mobility in the shoulder joint might prove a disadvantage in a gymnastic sense, but that is a physical handicap of a specialised and not of general nature. However, it must be confessed that the above conclusions seem to be less applicable to the feet than to minor spinal deviations, but as Munrow says 'perhaps the statement that mal-posture is due to habitual mal-position is a dangerous half truth. Is it not true that mal-position is accompanied by a sedentary existence? Diminish the sedentary existence by periods of vigorous, strenuous and enjoyable exercise and perhaps most of the mal-posture will go with it.' [1]

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[1] *Patterns of Muscular Activity in Posture and Movement.* W. F. Floyd and P. H. S. Silver. Science News No. 22. Penguin Books. P. 12.

[2] *Posture.* A. B. Appleton. Physical Education Journal. March 1946. P. 12.

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[1] *Physical Education and Youth.* A. D. Munrow. Journal of P.E. and School Hygiene. March 1941. P. 29.

V

Physical Education and the Transfer of Training

THE FACULTY PSYCHOLOGY

THE Theory of Mental Discipline is as old as Plato, and persisted until recent times. In Victorian times the belief was that the classics afforded a mental training or discipline superior to that of any other subject, the mind being trained in the faculties of reasoning, memory, concentration, attention, judgement and accuracy which, having been developed by classical study, could be applied with equal facility to other subjects and to other situations. It is now recognised as false to think of the mind as the sum total of a large number of watertight compartments, and today one is apt to be suspicious of enthusiasts who attribute less importance to the intrinsic worth of their subject and more to an alleged carry-over influence. Such processes of thought are little more than examples of self-deception and rationalisation. How convenient it was for the Victorian headmaster to disallow scope for a wider choice of study on the grounds that the existing scheme of classical study alone was necessary!

Although dispelled in reputable educational quarters for some years, a hangover of the faculty theory persisted in Physical Educational circles until quite recently. Before the war great importance was attached to complicated rhythmic jumping in the Gymnastic Lesson as a means of developing a general faculty of neuromuscular control, as though a late cut at cricket might be the more readily performed as a result of the frequent performance of a complicated pattern of arm and leg movements.[1] Perhaps the hangover is not quite dispelled, but is still evident in the new cult of Modern Dance,[2] often claimed as an 'open sesame' to a wide variety of dissimilar skills ranging from those of the playing-fields to the factory bench. Until there is some evidence from research to support such claims, would it not be more proper to justify Modern Dance on grounds of its own fundamental worth?

SITUATIONS FACILITATING TRANSFER

There is little doubt, however, that in certain circumstances some transfer of training, from one experience to a new situation may be achieved. The amount of transfer seems to depend upon the similarities between the two situations and to be proportionate to that amount of similarity. Thorndike's theory seems to be applicable alike to motor and to purely mental functions, and appears now as little more than a substantiated common-sense view that effectively disposes of wishful carry-over from the rhythmic jump to the late cut, from the stabbing movement to the cover-drive.

Yet, as Munn[3] points out, transfer is not an automatic process, and it is not enough that the similarities should exist, but it is also necessary that they should be recognised and their presence appreciated.

The attitude towards the situation is also of some importance. Practice in the sense of mere mechanical repetition is now realised to be an uneconomical and rarely successful means of making perfect. Practice, to succeed, must be allied with knowledge, with interest, and must be subjected to intelligent self-criticism. Sometimes it is the mental attitude alone that governs the transfer, as Ruediger's investigations into neatness show. There was no transfer of neatness until the children were convinced that neatness was something worth while, an ideal in which they believed, and one that they appreciated could be applied with benefit to a variety of different situations.

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[1] *Skill and Physical Education.* P. McIntosh. Physical Education Journal. Nov. 1948. P. 135.

[2] *Relaxation.* A. D. Munrow. Physical Education Journal. March 1949. P. 16. Also *Effort.* R. Laban and F. C. Lawrence. Macdonald & Evans. P. 18.

[3] *Psychology.* N. L. Munn. Geo. Harrap. P. 122.

These seem to be the factors that influence transfer, the Theory of Identical Elements and the attitude towards an Ideal, and in the light of this scanty knowledge it is important to consider certain aspects of Physical Education in general and of the Physical Education Lesson in particular, namely:

1. Progressions and Skill Practices.
2. Posture.
3. Some aspects of Character Training.

PHYSICAL EDUCATION AND PROGRESSIVE PRACTICES

Physical skills are acquired first by conscious effort, until the pattern of muscular response can be correctly evoked without a distracting amount of such effort. In other words, the mind is freed to concentrate on the recognition of the stimulus, leaving the appropriate muscular response to follow as largely reflex. The cricketer makes sure by practice that he lifts his bat automatically in the same straight path as it will follow in the downward stroke. He steps out towards the pitch of the ball not, finally, from conscious volition but because his eyes have recognised their visual cue and the appropriate reflex pattern has been put into play. Sometimes the eyes are deceived, the cues are interpreted wrongly and the following reflex pattern is not the appropriate one after all; sometimes conscious control comes to the rescue in time to restrain the reflex response and to initiate a different one. Thus, although the degree of conscious control may vary, a large part of any physical skill becomes reflex to a greater or lesser degree.

In order to condition a reflex or to eliminate undesirable accessory movements, it may be necessary to simplify a skill or to separate it from its context and practise it 'on its own'. It is interesting to note that in connection with the elimination of uneconomical flourishes Bartlett [1] suggests an increase in difficulty rather than a simplification and slow-motion practice. This certainly gives colour to the feeling general today, that many of our skill-progressive practices of yesterday were too simplified and too carefully graded into easy stages.

Certain games lend themselves to the process of separation of the basic skills from the game itself, and where this can be achieved easily it seems to be an eminently logical and desirable way of attaining a higher standard of performance in the game itself. There are two processes involved, the breaking down and the rebuilding processes, while experience and the Gestalt theorists remind us that the sum of the parts does not necessarily represent the whole. Consequently, there has been of late a swing away from the methodical and logical progressive practices of the past in favour of learning by 'having a go'.

Within the limits of common sense, there is much to be said for this method. To be too technique conscious is to kill interest. Bartlett points out that with skill there are two thresholds, one a measure of what can be done, the other what is worth doing.[1] 'At the beginning of an exercise they normally approximate to the same value though they are never quite identical. With continued exercise, or under a variety of other conditions, they diverge more and more.' It is up to the teacher to maintain interest, to foster the belief that what is being practised is worth doing, to balance the impatience of youth with the necessity for consolidating the mastery of fundamentals. But the pendulum always has a tendency to swing too far. Overemphasis in representing a point of view can lead the literally minded to make dangerous errors. It is obviously wrong to persist with movements uncorrected until the wrong reflex becomes conditioned. Games are rarely 'natural'. It is more natural to step back and swipe to leg than to lean over the pitch of the ball and play along the line of flight.

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[1] *The Measurement of Skill.* F. C. Bartlett. Occupational Psychology (The Journal of the National Institute of Industrial Psychology). Jan. 1948.

Of course the teacher is right who introduces the javelin to children by first satisfying, with safety precautions, the natural itch to pick it up and throw. The children will quickly appreciate that a new technique of throwing needs to be acquired, and will be all the more ready to learn. But 'having a go' is not a substitute for technique practice, in certain circumstances it should merely precede or quickly follow technique practice. Many men 'pick up' tennis. They have never been coached. They have brought good physiques and perhaps an eye for a ball to the game and quickly reach a sufficient standard to enable them to hold their own in average mixed tennis circles; but they are unlikely to get beyond a limited standard fairly quickly achieved. The 'swing-up-in-front' type of service reveals lack of coaching, and probably will preclude progress beyond a respectable mediocrity. Coaching should render possible a much higher plateau of skill attainment, far above anything ordinarily attained by mere trial-and-error methods.

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[1] *The Measurement of Skill.* F. C. Bartlett. Occupational Psychology Jan. 1948.

Doubtless there are corresponding dangers associated with too much attention to the simplifications of skills, and the question of skill development must be measured against the known principles regulating transfer of training. The simplified version must have certain elements identical with the final situation. The child as well as the teacher must be aware of these similarities and always have an end in view. Never must the skill practice become an end in itself, and the child must be keen to achieve and willing to strive to reach a high standard of accomplishment.

Of the games that lend themselves to this breakdown process, Soccer is an obvious example. Dribbling, heading, trapping, etc., can be practised separately and worked into attractive relays that, however, can easily result in an unwelcome shift of attitude, and as a result the child may be less conscious of the relevance of the skill to the actual game of football. Moreover, we all know the player who uses the game in order to show off his clever tricks of ball-control instead of subordinating his skill to the pattern of 'direct' play. Ball control has then become an end in itself, the means has become confused with what should have been the end. Transfer itself may be adversely affected by this lack of appreciation of the true relevance of the skill practices. Ball-control acquired under the artificial conditions of the gymnasium may break-up under the differently competitive conditions of match-play. The situations have not a sufficient number of common elements to ensure a high degree of transfer.

To practise dribbling under non-competitive conditions is undoubtedly a valuable exercise in the early stages of acquiring a skill, and can be repeated even in the later stages by the polished footballer. But to learn dribbling by the practice of dribbling relay races, even after some skill has been acquired by non-competitive methods, is certainly an entirely different matter. For example, to win the relay becomes all-important, and to do this it is probably better not to keep the ball close to the feet, but to kick ahead and follow. In order to win the relay the practice has lost much of its value as far as skill-acquisition is concerned. If, however, sufficient skill is possessed to move at speed and yet maintain tight control, then surely the child would be better employed, as a general rule, putting into practice his ball-control under truly and not artificially competitive conditions?

A skill, therefore, must be restored to its games context as soon as possible. The child should be assisted to see it always as against this background. The similarity of the conditions should be increased and emphasised as the building-up process proceeds. It is not sufficient merely to head a ball; but then a ball must be headed with a purpose and then the same skill must be put into practice against a partner, always ensuring that the competitive element introduced is of a positive, not of an artificially distracting, nature. Moreover, no lesson should be so technique-weighted that some outlet for trial is not allowed for under what approximates to game conditions. In Rugby this may mean a simplified version played across the pitch instead of along it, perhaps, with seven a side only; but, nevertheless, at least half the lesson time should be allocated to the practice of the skills restored again to their former context. This, coupled with coaching and encouragement, should ensure that the similarities are self-evident, the relevances of the practices appreciated and that interest does not wane. Only so will a high ratio of skill transfer be assured.

Skill separation and technique practice is not necessarily in conflict with Gestalt theory. The separation and simplification of a skill are not necessarily one and the same thing. To practise heading is to separate a skill from its context but still to practise a 'functional whole'.[1] To split a skill down further may be undesirable, the danger being that the movements may become so small as to lose their point and so appear to the child as irrelevant or unnecessarily frustrating. 'Jumping to head an imaginary football' may provide sufficient activity to warrant its inclusion as an Introductory Activity, but the absence of a ball makes it very pointless as far as Soccer itself is concerned. A negligible amount of transfer to sprinting may be expected from the class practice of running on the spot at the wall-bars with high knee-lifting and rear-leg straightening, the grip on the wall-bars ensuring the desired body-angle.[2] Neither activity seems a 'functional whole' in the sense that the various hurdling limbering practices are; which rather points to the fact that skills may be divided into two classes. Some skills may be broken down into simple elements which are quickly built up again and, after that, practised in their more complete form. For instance, if the basic

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[1] *The Principles of Physical Education.* Jesse F. Williams. W. B. Saunders Co. P. 101.

[2] That is as a class practice. It obviously might be of value as a means of correcting a specific fault in an individual—e.g. lack of knee-lift in a sprinting action.

Western Roll Hop still eluded a proportion of a class it might legitimately be built up by progressive steps quickly following on one another: a straight hop; a straight hop plus a turn; the same, landing on the two hands and the hopping leg. Having mastered this simple hop, there would seem little point in the individual practice of the separate stages listed above. The finished hurdler, however, still derives value from the separate performance of many of his hurdling 'progressions' which are useful technique practices for the expert as well as for the learner.

Munn[1] emphasises that even the presence of identical elements does not ensure transfer unless there is conscious realisation of the points of similarity. There must be more than this, however. Negative transfer may be achieved despite, or even because of, the presence of common elements which may be misleading in that they suggest a false similarity. Tennis and badminton are two superficially similar games and this similarity might mislead the tennis player causing him to take tennis responses to the game of badminton. The implication seems to be that more than an appreciation of similarities is necessary, but also of the dissimilarities in order to avoid 'habit interference' when new responses are needed for what appear to be familiar situations.[1]

TRANSFER AND POSTURE

The findings of the Lincoln School Experiment [2] confirm our suspicions that there is no development of a general athletic facility as a result of the P.E. lesson, at any rate at any appreciable level. Physique may be improved, and both strength and suppleness are physical attributes that can be applied generally to other situations, but normally the best way to acquire specific skills is to practise them and not to indulge in substitutes.

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[1] *Psychology*. N. L. Munn. Harrap. P. 125.

[2] *Experiments in Homework and Physical Education*. A. Sutcliffe and J. W. Canham. John Murray. P. 189.

With regard to 'Posture' some improvement in static posture tests was recorded, as might be expected, as the result of the devotion of extra time to the P.E. Lesson. No attempt has been made to appraise any influence on general carriage outside the gymnasium as a result of the P.E. lesson, but the report does suggest that improved posture must be the result of more than a few corrective exercises, and attention is directed to the success of Army methods with the military bearing. 'Without the least desiring to imitate the old fashioned type of posture, a valuable lesson can be learned by studying the methods which were so successful in obtaining it . . . there was always compulsory insistence towards it. At all times the recruit had to carry himself well; he had constantly before him an ideal to strive for, and in time acquired the habit of maintaining a good army posture.' [1]

To the long-service man there is little doubt that a 'martial bearing' is more than a posture to which he has to conform. There is, of course, continual insistence on it, and the whole training is directed towards it, but there is the element of an 'ideal' present. The bearing symbolises self-respect, smartness and efficiency, and the keen and ambitious soldier strains to suggest these qualities through his 'soldier-like' bearing. With the short-service conscript this element of the ideal may be lacking. As with Ruediger's experiments in neatness, the mere imposition of a soldier-like bearing may achieve no carry-over. In fact, an opposite reaction may be expected on demobilisation. To obtain transfer into general everyday life there must be co-operation and belief in the worthwhileness of whatever type of posture is being advocated.

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[1] *Experiments in Homework and Physical Education.* A. Sutcliffe and J. W. Canham. John Murray. P. 190.

Without attempting to impose a standard 'good' posture on children, it does seem that more must be done than to expect results to be derived from a few exercises and one or two weekly posture tests. Scare talk of ill health through postural defects seems as unsatisfactory a way as that of letting the matter look after itself. Instead, a more positive attitude to carriage should be attempted, and the interest, belief and co-operation of the child sought. The mechanical advantages of an upright stance can be discussed, and posture can become linked in the child's mind as part and parcel of a well-developed physique. It no longer becomes a cult that belongs to the gymnasium and has no significance elsewhere. Staff cooperation can emphasise the identical elements of good carriage in and outside the gymnasium, and can compensate for the lessened insistence on posture in the P.E. Lesson that has resulted from our loss of faith in the value of the static posture test. The child must feel without any unhealthy narcissus tendency, an interest in his own physique and a pride in its development and bearing. The word 'ideal' may seem too strong to use in this connection, but it savours of it, and as Ruediger achieved no neatness carry-over until the children believed that it was worth while, so there will be little or no transfer of carriage into normal everyday life until the children are firmly convinced and constantly reminded that posture is something fundamentally desirable. Such an attitude coupled with a love for a wide range of physical pursuits should ensure that the healthy child develops an erect and well-balanced physique.

TRANSFER AND SOME ASPECTS OF CHARACTER TRAINING

Thulin [1] claims that in addition to purely physical results the development of certain moral qualities is derived from the practice of gymnastic exercises. This is typical of the claims that have been made by enthusiasts for all sorts of physical pursuits. We are constantly being told that boxing teaches the control of temper, that different brands of football develop the ability to think quickly, to size up situations, while the spiritual renaissance brought about by the playing of cricket has become a species of music-hall joke. The implication of these claims is that these tendencies practised in the boxing-ring and on the playing-fields are necessarily transferred to other dissimilar situations.

Participation in Physical Education must result in impressions being made upon character as well as upon the body of the child, but it is rather naïve to expect the inculcation of certain qualities to accompany the practice of specific activities. If this were so, in our discussion of the aims of Physical Education and of the P.E. Lesson the development of desirable social attitudes should be moved from the list of 'general objectives' and made an 'immediate objective'; as though in a specific lesson social attitudes can be as directly 'taught' as physical skills—'today we will take hand-stands, perseverance and courage!' [2] Physical Education has a contribution to make in the development of body, mind and personality, but its effects upon character may be desirable or undesirable according to the sense of values of the child, of his family and friends, and of the teacher himself. That sense of values is a reflection of a variety of influences: it develops; it can be altered; but it is a mental and not a physical attitude. Good sportsmanship does not necessarily accompany proficiency at a game, and it is illogical to coach the one and yet to leave the other to take care of itself, or to tackle both problems by the same direct methods.

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[1] *Gymnastic Handbook*. J. G. Thulin. Sydsvenska Gymnastik Institutet Lund. 'Every movement has a definite object. Certain exercises can develop strength, suppleness and particular moral qualities, others can be applied to cultivate discipline. . . .'

[2] F. J. C. Marshall, however (*Physical Activities for Boys' Schools*. University of London Press. P. 20), in a specimen lesson gives the aim of Part IV (Relays, Games, etc.) specifically as 'To give Social and Character Training'.

Having acquired good manners on the playing-field, transfer is not necessarily assured to situations off the field of play.[1] Football may be played with all the semblance of good sportsmanship, with regard to the rules, yet to achieve carry-over the children must be helped to appreciate fair-play and sportsmanlike behaviour as worthwhile ideals of conduct which can be applied with advantage to general situations of social intercourse. If the attitude on the playing-field is that attention to the rules merely makes for a pleasanter game, or that the standard of refereeing is too high to allow sharp practice, then little transfer may be expected.

A sense of fair-play is not instinctive, neither is it solely a British possession. It does not vary in proportion with the skill of the performer, and it does not develop inevitably as the result of continued practice of a game. It is the result of an attitude which has developed through the conscious acceptance of an ideal; although a sportsman is best revealed by his actions and not through 'lip-service'. He does not go round slapping on the back and urging others to play up and play the game; neither does he make the mistake of measuring complex situations by too simple a yardstick. The 'Gad, sir, it's not cricket' attitude characterises an unduly simple attitude, an immaturity of mind, and savours of priggishness. These are all possible by-products of misguided zeal for character training on the playing-field, but are only arguments against misdirected efforts.

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[1] *The Theory of Play*. E. D. Mitchell and B. S. Mason. A. S. Barnes and Co. Pp. 285–295.

First, the teacher must look to himself and the school to itself. No teacher would subscribe to unsporting views, but children are quick to see inconsistencies in our conduct. It is easy for the keen games master to be overanxious for his team's success. Headmasters can make similar errors in their anxiety to build up the school's reputation. No team game is worth playing unless it is played to win, but too much importance can easily be attached to winning, and a display of too much anxiety or disappointment or satisfaction can lead children to conclude that really it is all-important to win. The standard of school refereeing often leaves much to be desired. Children are not deceived by the Rugby ref. who allows 'off-side' to go unpenalised until the inevitable breach occurs in range of the enemy posts. In such circumstances it is hard to expect fair-play and good sportsmanship to be appreciated by the children as ideals.

The spirit of sportsmanship in a school can be gauged pretty effectively by the conduct of the spectators. Too frenzied a partisan spirit suggests a lack of perspective somewhere, and one can only conclude, somewhere at the top. A degree of self-restraint can reasonably be expected not only of the players but also of the spectators. Too enthusiastic support disallows any objective appreciation of fine points, which ought to be one of the major satisfactions to an onlooker.

Children learn by imitation to a large extent. Certain habits, on the Soccer fields—gesticulations, mute appeals with outstretched arms, warm handshakes after the scoring of a goal—are examples of undesirable imitation. In tactfully condemning such practices the games master must take care that there are no unfortunate inconsistencies between his theoretical and practical approach towards games success. The child's sense of values and perspective will be influenced to a lesser or greater degree by the teacher's. The teacher of Physical Education has a great responsibility—as every specialist in this subject should be fully aware.

Other Moral Qualities

With regard to all the other aspects of character that the Scandinavians claim can be developed by the gymnastic lesson,[1] it is difficult to be dogmatic. What seems fairly certain is that there are no general faculties of courage, dash, initiative, leadership, etc., to be developed by specific training and generally transferred to other situations. Such qualities seem to be highly specific to the occasion. Persistence and fortitude may be revealed in the boxing-ring and not on the rugby field—and vice versa. Interest and belief in the worthwhileness of what is to be done again plays its part, or, as McIntosh puts it, 'transfer of training may also take place through the agency of emotional attitudes, sentiments, and ideals'.[2] Varying degrees of courage and resolution, for instance, may be applied to certain situations in which it is believed that 'the game is worth the candle'. The extent of that belief is, to some extent, a measure of the success of the teacher: 'it seems that for the teacher in physical education, just as important as a thorough knowledge of his subject is his personal relationship with his pupils.'[1]

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[1] 'Through the function of the senses there is the development of: willpower and energy; control and self-discipline; presence of mind and responsive action; self-knowledge and courage; alertness of mind and character.' *Gymnastic Handbook.* J. G. Thulin. Sydsvenska Gymnastik Institutet Lund. P. 70.

[2] *Skill and Physical Education.* P. McIntosh. Physical Education Journal. P. 136.

Whilst subscribing to the view that the exercise of various moral qualities is highly specific, it seems reasonable to assume that personality and character are coloured through their constant practice, and the chances of transfer would seem to be heightened if this occurs in as wide a field of different situations as possible. We cannot claim to 'teach' dash, courage, initiative, etc., in the gymnasium, but that is not to say that we should neglect any opportunities of exercising these qualities in relation to the restricted occasions of the P.E. and Games Lessons. Widen the scope of Physical Education; exercise, for example, self-reliance on every available opportunity in every aspect of Education, and some positive contribution should be made upon the personality. Burroughs defines personality 'as what a person is or seems to be as judged by his behaviour' acknowledging 'that physical and intellectual qualities are major determinants of this'.[2] To a limited extent therefore, it would seem that Physical Education has its part to play in character training.

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[1] *Skill and Physical Education.* P. McIntosh. Physical Education Journal. P. 136.

[2] *Assessment of Personality in Junior School Children.* G. E. R. Burroughs. Educational Review. Feb. 1950. P. 119.

VI

Physical Education and the School Child

'The harmonious development of body and mind' is an often expressed ultimate aim of Physical Education that is obviously shared with Education as a whole. However, in the Nursery stage, it is far from being a remote aim, but instead is in the nature of an immediate objective. Attempt is not being made to educate any particular facet of child mind or physique, but the whole child and in every way. Just as the mental, physical and emotional lives of the child are all closely related and cannot be separated, neither can the physical education be carried out separately and be severed from other aspects of the child's education at this stage.

In the young child the normal development of the mind depends upon movement to a far greater extent than in later periods of the child's life. The impulsive movements of the young baby are not meaningless or random ones, but are part of an overall plan, serving the baby's needs at that time.[1] Rob the baby of opportunities to kick, clutch, wriggle and crawl and the development of the child in every way may be retarded. Josephine Rathbone emphasises the connection between a puny physique and postural defects later in life with failure to provide freedom for natural movement in the very early stages, which is true to varying extents of the whole growing period until adulthood is reached. 'Creeping and hanging, as well as balancing, have been found to condition reflexes which encourage normal bodily development. . . . Children who do not creep miss an important phase in development. Their spinal and abdominal muscles do not strengthen properly.'[1] The importance of giving scope for natural movement is much more generally realised today, and much recent publicity has been given in the Press to a doctor's condemnation of too frequent use of perambulators on the grounds that the child is denied opportunity for unrestricted movement. The home and the Nursery School must provide these opportunities for education to be really efficient.

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[1] *Life in the Nursery School.* L. de Lissa. Longmans Green. Pp. 39–40.

Unhampered movement, however, is far from being necessary solely for physical reasons. The young child learns through physical activity. The areas controlling movement develop first in his brain, and the connection between positive health and intelligence, ill-health and general backwardness cannot be over-emphasised. It is through motor-functions, through the development of neuro-muscular control, through manipulation and increasing dexterity that the mental processes and emotional reactions are stimulated.

THE NURSERY SCHOOL ENVIRONMENT

The Nursery School is concerned with education as a whole, just as it is concerned with the balanced development of the whole child. It is not concerned with formal teaching methods, but with the provision of an environment suitably stocked to stimulate a wide variety of experiment and a wide variety of movement. The movement of the body is not thought of in terms of parts but of wholes. Encouragement to lead a natural unrestricted life is not derived from isolated movement and the apportioning of activity for arm, trunk and abdominal development. Gymnastics, at any educational stage, can only be justified as an artificial means of counteracting the cramping effects of civilisation. Such effects, inevitable to some degree later on, should not be evident in Nursery Education, where in- and out-of-door freedom for play, for experiment and for movement is provided. Physical activity should consist of larger movements involving the simple coordinations of running, climbing, swinging by the arms, jumping, throwing, digging, lifting, carrying cumbersome objects, pushing and pulling.[1]

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[1] *Corrective Physical Education.* J. Rathbone. W. B. Saunders Co. P. 88. See also *Textbook of Gymnastics.* K. A. Knudsen. Churchill. Volume 1. P. 84.

The Nursery Class aims at providing a simplified pattern of life with situations with which the child can cope largely by himself, freed from the irksome 'don'ts' of the adult world. He is provided with a 'miniature world in which the child can live naturally'.[2] He learns by living, which to the child consists of play involving motor experiment.

From babyhood exploration and discovery of the immediately surrounding world is through movement, and this is as true of the baby who first becomes aware of his fingers as of the toddler whose increasing mobility so vastly increases the possibilities of his environment. In all cases the urge for movement is fundamental and natural, needing little encouragement other than that derived from the mere presence of facilities for climbing, experiment, lifting, weighing, comparing, etc.

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[1] *Life in the Nursery School.* L. de Lissa. Longmans Green. Pp. 29–30.

[2] *Ibid.*

Just as crawling precedes walking, with important physical repercussions later on, so do the locomotive abilities, the simple skills of running, hopping, jumping and skipping, precede the manipulative skills. Physical activity becomes increasingly allied with both mental and emotional education and enters into all spheres of infant life. As an integral part of general nursery education, and not as a separate department, the aims of physical education in the Nursery and Infant Schools can be summarised as follows:

1. To develop the whole child, mind, personality, emotions and physique.
2. To provide opportunities for free movement using the body purposefully in objective activity.
3. To ensure that opportunities exist for the practice of activities appropriate to the development and age of the child.
4. To provide materials that will stimulate the use of imagination, ingenuity and experiment on the part of the child.

Activity, then, is the keynote of Nursery School education, and provision for physical activity involves the planning of a suitable indoor and outdoor space. Outside there should be lawns for dry weather and an asphalt area for when it is damp underfoot; there should be climbable trees and low walls to balance upon, steps to jump from, gardens to dig, sand to play in and water for paddling. Both in- and out-of-door play facilities should provide some large climbing-apparatus of the Jungle Gymn., Essex, Southampton or Bristol types; large push-and-pull-about toys including (besides waggons and trolleys), scooters, tricycles, see-saws and swings; a deal of 'junk' in the form of poles, planks, boxes, barrels, motor tyres, electric cable reels, etc., all vetted free from splinters and nails; and of course a variety of balls of all sizes and colours, bean-bags, jumping stands, etc.

The child is not told how, when or what to use. There should be no need. The inborn desire for activity is too strong. Provision of the right surroundings is all that is necessary, and the enforcement of an adult-planned programme for indoor and outdoor play becomes not merely superfluous but undesirable. The part that the adult needs to play is:

1. to provide the right environment;
2. to remove all possibilities of danger, for example, the building of structures with improvised apparatus needs adult supervision to ensure that the structures are safe;
3. to be prepared to come to the rescue, if necessary, and to cooperate and help when approached by the child.

Great care must be taken not to persuade the child to attempt what he is loath, and therefore unready, to do, nor by suggestion or inflexion in the voice to transmit fear to the child by a display of anxiety.

THE SIMILARITY BETWEEN THE NURSERY AND INFANT APPROACH

The fact that Physical Education usually exists as a separate entity in the Infants' School is not because the child's physical and mental education should now be separated and developed independently, but because restrictions of space and of equipment make such arrangements inevitable. Often the Infants' School is without grass and gardens, with few facilities other than a bare playground for free activity. Consequently this limitation necessitates the premature appearance of the P.E. Lesson on the time-table; but fundamentally there is no difference in approach between Nursery and Infant Education. The Infants' School is still concerned with the provision of the right environment. 'Equipment and playthings which will encourage motor-practice and hence the development of motor-skills, will offer the opportunity for activity when the child develops his readiness for the various steps of growth.'[1] Thus, the right type of environment is one that is appropriate to the child's development; but unfortunately, in actual practice the child cannot always decide exactly when and what he is to do. However, the appearance of the P.E. Lesson as a separate entity on the time-table should not result in a formal lesson of instruction, but should still provide for free activity stimulated by the presence of equipment such as some of the following:

1. Large apparatus of the Jungle Gymn., Essex, Bristol or Southampton type.
2. Large improvised apparatus—barrels, planks, poles, tree-trunks, ladders, boxes, cable reels, benches, tables, etc.
3. Small apparatus—hoops, ropes, balls, rubber rings, quoits, shuttles, bean-bags, bats and balls, whips and tyres, etc.

Children should share in the care, the getting in, putting away and the organisation of apparatus, because, apart from other considerations, the lifting, pushing and pulling involved is of physical value. The Infants' Lesson does not necessarily prohibit certain aspects of the 1933 Syllabus type of lesson as long as the main feature is given to free play. For instance, an Introductory Activity or a finishing game as suggested by the Syllabus may well be introduced, but these activities should not become substitutes—adult-suggested substitutes—for free experiment with a wide range of apparatus. Observation leaves little doubt as to the degree of energy and interest expended in self-selected activities as compared with those of adult suggestion. 'The thrill of accomplishment which accompanies each new bit of learning seems genuine, as the child throws back his head to crow his delight or abandons himself to an orgy of practising his new achievement.' [1]

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[1] *Growth and Development of the Young Child.* W. Rand, M. E. Sweeny and E. L. Vincent. W. B. Saunders Co. P. 279.

The child, then, is given the opportunity to work as an individual in his own way and, as far as possible, in his own time, without falling short of standards suggested by the teacher or set by other children. Ingenuity, imagination and experiment are encouraged, as are confidence, independence and fearlessness. These qualities have been fostered from the first for 'the number and severity of bumps that some children take without complaint or discouragement in the process of learning upright locomotion seem proof of intense absorption. We miss an excellent opportunity to teach physical courage if we curb his freedom or seem too concerned over his bump.' [2] But these qualities are not being trained and developed in an artificial way divorced from real-life situations. Some carry-over should be assured because physical education in the Nursery and Infants' Schools is an integral part—to a degree not true later—of general education. This in turn is concerned with the creation of a real-life, if simplified, environment with real-life situations which the child can solve for himself without the frustration of a solution imposed by adults. Under such conditions a large degree of carry-over may be expected.

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[1] *Growth and Development of the Young Child.* W. Rand, M. E. Sweeny and E. L. Vincent. W. B. Saunders Co. P. 268. [2] *Ibid.* P. 269.

PHYSICAL EDUCATION AND THE JUNIOR SCHOOL

The Junior School marks a period of transition between the Infant stage below and the Secondary School above. It is obvious that the child at the bottom of the Junior School differs very slightly from his counterpart at the top of the Infants' School, while the needs of the top Junior Class and bottom Secondary School form are also alike. Therefore, there must be no violent alteration in approach between the Infants' and Junior School or between the Junior and Secondary School, and, in order to achieve this continuity, it follows that the Junior Teacher must have a sympathetic understanding of the free work of the former and of the more systematised methods of the latter type of school. Only so can the child's education in general and physical education in particular be a continuous process with one stage merging smoothly into another.

Infant School Physical Education has largely been concerned with the provision of a suitable array of apparatus to encourage spontaneous activity; but already, perhaps rather prematurely, Physical Education has appeared as a separate part of the Infant education scheme on the time-table. Play has remained free, however, even if the choice of 'le moment juste' has been in part denied the child. No radical change of plan should occur on entry into the Primary School. The school should still be concerned with providing a large variety of worthwhile activities that will prompt a wide diversity of physical exercise. Obviously, after the adventurous interpretation of Physical Education below, the formal type of Syllabus lesson with, to the child, its meaningless jargon and imitative, often joyless movement of the 'Trunk bending down—begin' order, is out of place. That methods and material need not be fundamentally dissimilar is shown by the successful use by infants of the Southampton Apparatus, designed for Junior work, and the satisfactory use of the Essex Agility by the Lower classes of the Junior School.[1]

Slow though the transition should be, the rapid increase in motor skill and the dawning development of the competitive spirit make the evolution of new methods desirable. Adult leadership becomes increasingly indispensable. Self-assertion grows, and the child begins to make comparisons between his own achievements and the standard set by the teacher and, more important, by other children. The growth of the competitive spirit may necessitate a different attitude towards free activity on the climbing apparatus. At an earlier stage the child is predominantly interested in his own activity. A native innate caution curtails rash experiment in advance of motor ability. In the Junior School, however, the child becomes increasingly aware of the capabilities of others. A desire to emulate, for praise, or to show-off, can cause over-adventurousness for which the teacher must be prepared. Although formal instruction on the use of the climbing apparatus should not replace free experimental practice, the teacher must be ever vigilant to forestall an accident without appearing unduly apprehensive. So, with the gradual setting of external standards, with the further increase in motor-ability and with the growth of the competitive spirit, develops a need for a greater degree of guidance by the teacher.

[1] These experiments have been tried successfully by my colleague, Mrs. D. Burrows, Lecturer in Infant Education.

A new technique emerges, for, with the teaching still largely informal and unobtrusive, with the minimum of domination by the teacher and with the retention of some scope for preferential practice and experiment, the children are being deftly guided towards a variety of goals.

THE OBJECTIVES OF JUNIOR PHYSICAL EDUCATION

The Junior teacher is concerned with the development of physique through a wide variety of purposeful exercises. 'Free walking' and 'free running' are hardly purposeful for children of this age, in the sense that hunting and chasing games are. The traditional concern with maintaining joint mobility and counteracting the effects of an unnatural amount of sitting and stooping, may legitimately prompt the inclusion of some exercises. Movement should still be large, concerned with the large muscle groups,[1] and should not be frittered away in small isolated exercises that frustrate the child and deaden the lesson. For this reason Head Exercises as a separate group of exercises in the 1933 Syllabus are often discarded nowadays. No longer are children regarded as miniature adults and expected to behave like automatons. Effort has been made to provide exercises that are inherently pleasurable and objective. Sometimes the catching of a bean-bag or the rotation of a hoop calls for a satisfying amount of skill as well as producing some desirable but purely physical effect, while others merely provide an external incentive and a more interesting means of performing what would otherwise be a subjective type of movement.

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[1] 'Big-muscle activity stimulating growth, and consequently play is an absolute essential to the growing child.' *Theory of Play*. E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. P. 223.

During the Junior School stage, a large vocabulary of simple motor-skills should be developed so that, towards the end of their time in the Primary School, the children have the elementary ability to get more and more satisfaction from competitive group play. It is no good attempting 'wandering ball' until the children have acquired the ability to pass and catch accurately. The cultivation of a general ball-sense and ability, derived through the constant handling of all sizes and sorts of balls in a variety of ways that call for dexterity and anticipation, the ability to pass, catch and aim whilst on the move, are the elements of a basic training that should prove a valuable contribution to the playing of the major games in the Secondary Schools.[1]

PRIMARY SCHOOL P.E. AND THE MAJOR GAMES [2]

Educationists are unanimous that it is unwise to impose upon a child at one stage of development an interest which only comes naturally at a later stage. In the Nursery School, de Lissa says, 'it is harmful if not generally useless to try and train the child to be unselfish while he is still in the egocentric stage. Children who are forced to share their toys or to play together before there is a natural impulse to do so, rarely become really sociable and unselfish, though they may adopt an outward appearance of these qualities to win adult approval.'[3] The same is true of a common habit that appears later in the Primary School of imposing prematurely the major games upon children who have not yet reached this stage naturally. Perhaps the word 'impose' is too strong, but the introduction of a game unsuited to that stage of development in the child does result in a degree of imposition if the game is to be played with any semblance of success from an adult point of view. To see a game of Soccer in which the children are around the ball like flies around a jam-pot is to conclude that these children would be better employed playing a less complex game. The same conclusion may well be correct, even though the game proceeds with skill, cooperation and regard for positional play.

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[1] This may not be as considerable as expected—see Appendix B.

[2] See Appendix B.

[3] *Life in the Nursery School.* L. de Lissa. Longmans Green. Pp. 185–186.

When he leaves the Primary School the child should have the fundamental ability to play a number of group games with some success. These, although perhaps possessing certain skills in common with the major games, should be of a simplified nature so that they may be played with a fair amount of natural aggressiveness, without having natural instincts unduly snubbed in order to conform to a pattern of cooperative play for which the child is not yet ready. As M. B. Davies points out, at this stage children want lively games demanding resource and skill but with the climax not unduly delayed.[1] The major games demand a degree of cooperation which the child can be drilled to accept, but which develops more naturally during the Secondary School age. With the major games the situations are too complex, and the issues are in doubt far too long to make them in their final form suitable junior pastimes. It is difficult to see how Junior Leagues and Junior School matches in cricket and football can be educationally sound measures. Might not that sacrifice of leisure time and energy by members of staff be more profitably devoted to the coaching and organisation of simpler minor ball games with, perhaps, an eventual higher standard of play and an increased enthusiasm for games in the Secondary School being attained as a result?

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[1] *Physical Training, Games and Athletics in Schools.* M. B. Davies. Geo. Allen & Unwin. Pp. 14–23.

Primary P.E. Lesson and Relay Races

The harnessing of the competitive spirit in the Primary School needs care, as it still does later on. A sense of group play and group competition should develop and become increasingly evident by the end of this stage of school life. Play, although more cooperative, still retains, however, much of the highly individualistic spirit that characterises play at the beginning of the Primary School. By the age of nine and ten years, group games should be played with gusto. But they should be sufficiently simplified to give vigorous exercise for all, giving to each a function which seems as worthwhile as that of the next child and which, despite the necessity for cooperation, affords a satisfaction through self-assertion.

Relay races can be employed with a degree of superficial success that can be misleading. They are admirably suited to the competitive spirit of the Junior School age. The individual contribution can be easily gauged, and the individual's part in his team's success is sufficiently apparent to appeal to the self-interested outlook typical of this period. Because of this assertive individualistic spirit, group-play and games need adult guidance to ensure success. But, relay races do little to further skill development. Sometimes certain relays may make use of skills already attained, but they do not develop increased skill by reason of the keen spirit of competition, of haste, that they engender.

This is not to condemn relay races; they have too marked an appeal for that. The climax is sufficiently delayed to rouse intense interest without demanding undue efforts of concentration and sustained exertion. The temptation is for an undue emphasis to be placed upon them in the P.E. Lesson. It is all so easy. Little or no coaching, organisation or teaching is required. Keenness does not have to be stimulated. No elaborate technique has to be mastered. They make for enjoyable exercise, develop stamina very possibly, demand speed; but they do not develop skill. Relay races can easily be developed at the expense of ball-training games demanding patience, coaching, organisation and control on the part of the teacher. Moreover, the vociferous partisan spirit that too much indulgence is apt to encourage, suggests that while they are activities that have an undoubted place in the Junior Lesson, a disproportionate amount of importance can be easily attached to them.

CHARACTERISTICS OF THE JUNIOR P.E. LESSON

1. All-round development of the child through vigorous and enjoyable activity, the activity taking the form of objective exercises and a wide range of skill practices involving ball play, throwing, jumping, running and heading, etc.
2. The lesson retains some scope for experiment and for preferential practice, though to a more limited extent than in the Infants' School. This is due to the changing character[1] of the child's play necessitating more guidance by the teacher, and the setting of progressive standards.

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[1] *The Theory of Play*. E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. Pp. 175–176.

3. Despite the increased need for adult guidance to ensure success, satisfaction is derived from group play, lessons are still informal and free, guided rather than dominated by the teacher.
4. A grounding through minor games and simple practices is given in 'ball sense' in preparation for the more cooperative major games in the Secondary Schools.

PHYSICAL EDUCATION AND THE SECONDARY SCHOOLS

A school exists to serve the community, and different schools have different functions in this service. Those of the Modern School are not necessarily similar to those of the Grammar School, and, if an attempt is made merely to imitate, the implication is obvious: the Modern School becomes something inferior, a second best for scholarship failures. A sense of failure at eleven years, a sense of failure not dispelled in the next four years of school-life, is not a desirable trait to foster in the child. Unless the Modern School can offer a positive and worthwhile alternative education, the parents of scholarship rejects who can afford it are going to send their children to independent schools in order to make good various intangible advantages that would otherwise be denied them. This attitude would be most undesirable, in that it is in opposition to what the 1944 Education Act was meant to achieve. Rechristening is not sufficient to raise the status of the old Senior School to Secondary rank, and mere imitation is not going to achieve it either.

The Secondary Modern School has to consider the needs of its children, who are less likely to be academically minded than their Grammar School brothers and sisters. This is realised, and the Modern School is not expected to conform to a School Certificate routine.

This should not be interpreted as a slight and a loss of prestige but as an act of deliverance and a challenge. Too often education is thought of in terms of examinations, but here we have a freedom from examinations that gives the Modern School a great opportunity to develop those more practical aspects of education and also the more cultural, like drama, which cannot be measured against the examination yardstick and therefore may get less than their due attention in the Grammar School. Education is free to be interpreted more adventurously, and this is true of Physical Education also. In fact Physical Education is a most effective medium for achieving such results.

The Ministry is well aware that P.E. should be accorded a wider scope than it has generally been given. Teachers are encouraged to take rock-climbing and camping courses. Camping is included nowadays in the curriculum of most P.E. Colleges, while one College includes both rowing and sailing. The C.C.P.R. offers, in addition to the traditional sports and pastimes, courses in canoeing. All this new emphasis is only in accordance with one of the general aims of P.E.: to inculcate in the child a love of activity in the open air and a healthy way of life so that leisure time can be used purposefully. A school, therefore, must do more than play games. It must widen its scope. Through Physical Education, through a love of rambling, through camping the school can extend its botany investigations, its geographical and topographical researches, encourage bird-life observations and arouse architectural interest in old churches and the like. School journeys, expeditions, purposeful country walks are already less of stunts and outings but more an integral part of the educational approach. For full advantage to be taken of these excursions small parties regularly occupied in a variety of investigations seem more desirable than a few mass excursions in which the main effort is dissipated in administration and organisation. By these methods the interests of the children can be guided and their enthusiasm so roused that the unsuccessful games player still satisfies his many curiosities through Physical Education after leaving school, while the games enthusiast benefits similarly through the widening of his horizons and the maturing of his sense of perspective.

These are advantages that the Modern School can exploit to an extent impossible for the Grammar School, and so the former can become, in many respects, an object of envy to its Grammar School counterpart, and all sense of failure, of second best, is expunged from the child's mind.

The Limitation of Age-range

The great advantage that the Grammar School enjoys is that its age-range, for an appreciable proportion of its pupils, extends to eighteen years. The troublemaker in the fourth and fifth forms may become a worthy and responsible prefect in the final two years. To a certain extent the Modern School does not benefit from the maturing influence of its own pupils at the top of the School. This increases the difficulty of the School in developing a 'tone' or 'spirit', while it also makes it inadvisable to transfer without considerable modifications a Grammar School Prefect System to the different conditions of the Modern School. The solution seems to lie in a more direct personal influence of members of staff plus only a limited amount of delegated authority. This does not argue regimentation. It seems incongruous in schools where free-spacing is employed in the Gymnasium, where group-activity methods are used in the class-room, that relics of the past such as a parade-ground marshalling of classes and marching away to class-rooms before school starts should still persist. The habit is dying a natural death, but still lingers in some areas. It is to be hoped that soon its death will be less natural and more precipitate. Why should the Modern School alone be subjected to such a needless and pointless procedure?

The limitation of age range will affect all aspects of school life and in particular those of Physical Education, but the accompanying advantage of freedom from examination should more than compensate. As pointed out elsewhere, the reduced age range must affect the level of games attainment in the school, but it may also affect the choice of games, because due regard must be paid to the existence of local facilities for continued play after leaving school. By the time the school-leaving age is reached, the school must be able to develop a sufficient standard of play, so that the boy not only derives satisfaction from playing but is also determined to develop his prowess further by regular future participation. Facilities must exist locally so that no difficulty checks the enthusiasm of the school-leaver. For these reasons it may happen that the Secondary Modern School prefers a winter game different from that of the neighbouring Secondary Grammar School.

THE MODERN SCHOOL AND THE P.E. PROGRAMME

The limitation of age range is offset to a large extent by other advantages peculiar to the Modern School. Some such schools have facilities that might well be envied by Grammar and Public Schools alike: adjoining playing-fields, new airy class-rooms and gymnasia. Perhaps fives and tennis courts have yet to appear and, maybe, squash courts will be available eventually for all types of Secondary Schools.

In addition to the increased scope for the wider interpretation of Physical Education, the time-table allocation for games should be as great or greater than that in the Grammar School. It is during this period of his development that more cooperative play and more complex games demanding skill, tactics, dash and determination have their maximum appeal for the boy. Physical Education must consist of more than a few weekly P.E. Lessons. It must be interpreted widely enough to foster a love for the open-air and of recreative pastimes that introduce the countryside to the town-child, apart from due attention to games, swimming and athletics. There must be increasing scope given for the coaching and practice of the major ball games which are the British lad's heritage. School games should feature on the time-table, with the P.E. lesson largely serving this end, but in addition school games as an ex-curriculum pastime and on a wider basis than that of school-team practices should be organised, encouraged and supported by members of staff with the same degree of self-sacrifice that has been traditionally accepted as part of the Grammar School master's obligations. Boxing, gymnastics, basketball should flourish as voluntary out-of-school club practices.

A live Physical Education programme gives opportunities for a wider and more personal influence by the staff, which can only result in an improvement of the spirit and tone of the school—so often lower in comparison with the Grammar School counterpart. Every child is sent to school by parents who hope that the school will give advantages that, perhaps, were denied to themselves, and these assets are not wholly material. The development of desirable social attitudes, the exercise of restraint and self-discipline are not confined to the P.E. programme, but can be achieved with any degree of success only through all aspects of school life. Moreover Physical Education provides a very real and big means of achieving the ends to which all branches of education and of school life must subscribe. The influencing of the conduct and attitude of players and spectators is more important than the development of their skill and proficiency. The latter will be the ambition of most boys, while the implications of the former may well pass unnoticed unless the school attaches importance to them. Such attitudes are not natural or instinctive, but they demand conscious effort, self-discipline and restraint. It would seem incongruous to coach skill and yet to leave children to look after themselves so far as social and character training is concerned.

THE MODERN SCHOOL AND THE YOUTH CLUB

The influence of older and more responsible boys is not lost indirectly to the Modern School if the local Youth Club is considered as an unofficial Old Boys' Club where past and present pupils meet. Whether the influence is desirable depends upon the Schools that feed the Youth Club and, of course, upon the Club itself. The two should work in the closest co-operation, and often do. Sometimes the Club is housed in the School buildings, often run by members of the School staff. The opportunity obviously exists for a degree of continuous planning, especially on the P.E. side. Here the big Grammar School advantage of age range can be partly offset. Games can be followed to a higher level. Facilities for post-school play are assured, and influence may still be exercised to encourage the child to use his leisure in a worthwhile fashion.

The Youth Club is more than a means of bringing youngsters off the streets, of providing them with cups of tea and games of table-tennis. It may start from the recreative side and retain a recreative core, but its contribution must be more positive than that. It must not merely centre on the gymnasium or the basketball court, but it should make offerings towards the sum total of the individual's personality as well. Personality is what one is, or seems to be, as judged by one's behaviour. Personality is influenced by temperament and by one's mental and physical life. Obviously Physical Education has a part to play in the development of personality. The Youth Club can continue the process of educating children physically. Besides other aspects of social life, it can cater for the natural mixing of the sexes. It must make a cultural impression also.

The opportunities exist, and the need is evident for the closest cooperation between the schools and the Youth Clubs which they feed. Through this liaison can be obtained some degree of that continuity of influence which is so beneficial to the Grammar School education in general and Physical Education in particular. Moreover, it is highly desirable that the Youth Club should attract its members from the Grammar as well as the Modern Schools. Increasing pressure of homework, school-games commitments and loyalty to School Societies limit the extent of Grammar School support, but it is in the interests of all that there should be some common meeting-ground where boys from all Secondary Schools can rub shoulders.

Playing-fields Shortage

Unfortunately a live Physical Education Scheme depends to a great extent upon the facilities available.

Too many schools today are overcrowded and equipped with a playing-field area that is quite inadequate. This is the case even where many new schools built just before the war are concerned. Since then, expansion has often proved impossible owing to development of the surrounding area, or, as in the case of many new rural schools, because of the agricultural value of the ground. It is one thing to subscribe to the theory that Physical Education in the Modern School should be interpreted to a far greater extent in terms of games and more games, but quite another thing to bring about this desirable state of affairs.

Moreover, the very inadequacy of school playing-fields often results in their becoming little more than the private preserves of the school teams. The alternative to this results in the wear of the football pitches until they are completely denuded of grass. The requirements of football often make the provision of a level cricket square impossible, and only the use of portable concrete pitches for cricket can help a school so placed to provide for a decent standard of cricket and football.

The position of the Secondary Modern schoolgirl seems to be even more difficult. Many of the school playing-fields that are available for hockey are not level enough to ensure the attainment of a reasonable standard of play. Hockey depends, like cricket, upon the uniform smoothness of its pitch. Without this the game degenerates, and luck instead of skill counts. This being the case, it is worth considering whether in these circumstances hockey is the best choice of game for the Secondary Modern schoolgirl. Because of these conditions winter games are often limited to netball in the play-ground; but could not lacrosse be played satisfactorily on pitches too rough for good hockey?

Football is too well established a tradition among all schoolboys to be supplanted by a new game even if it was desired to do so, but there is no hockey tradition in girls' Modern Schools to be considered. Moreover, lacrosse has been found to be a very popular and satisfactory game in many girls' public schools. Its development in Secondary Modern Schools should also be carefully considered.

If many schools suffer from the lack of adequate playing-space, Youth Clubs suffer even more so in this respect. This may mean that much of the continuity of scheme and cooperation between school and Youth Club proves difficult or impossible under existing conditions. But as long as the ideal state of affairs is appreciated and striven for, the improvisation and inevitable compromises of today may well result in an educational Utopia tomorrow. The playing-field problem is one of the major ones facing Education today.

VII

School Athletics and an Australian System

The Question of Heart Strain

The old bogey of a strained heart resulting from early participation in competitive sport has been largely discredited. A healthy heart, that is one that is not diseased, responds to exertion with an increase in size as does any muscle, but there seems to be no medical evidence that exercise can rupture the heart fibres or cause permanent dilation. Cureton[1] lists a formidable array of medical opinion on this point, concluding that 'the circulatory organs are built to withstand the strains that they themselves create and their reserve is often under-estimated. When the call is excessive, the full supply of blood to the muscles fails, not the heart.' It seems difficult, then, to dilate a normal heart beyond its physiological limit.

Schneider and Karpovitch[2] expose the miscalculation of Beneke in 1879 in comparing the development of the heart volume with the circumference instead of the cross section of the aorta and pulmonary arteries. The assumption that there is a discrepancy between the development of the heart and the arteries of a child, especially at the age of seven, was based upon Beneke's conclusion that the arteries develop more slowly than the heart, for, whereas the volume of the heart increases in proportion to the body weight, the circumference of the aorta and of the pulmonary artery increases in proportion to the body length.

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[1] *Physical Fitness Appraisal and Guidance*. T. K. Cureton. Henry Kimpton. P. 312.

[2] *The Physiology of Muscular Activity*. E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. P. 156.

Whilst allowing that these observations were correct, Schneider and Karpovitch point out that the comparison of the development of the heart volume with the circumference instead of with the cross section of the arteries was a fundamental error, 'even a plumber knows that the flow of fluids through pipes is calculated by using the cross-section and not the circumference of the pipe'.[1] Karpovitch has taken Beneke's original data and compared the rate of development of the heart with the cross section of the arteries in question, with reassuring results,[2] concluding that 'it is fortunate that children have not read books on pediatrics and have kept on playing'.

The Necessity for Training

The fact that the heart is normally strong enough to cope with whatever calls are made upon it in youth does not render training superfluous. Training is necessary to enable the child to produce his best results. Training is also necessary to enable the child to perform strenuous exertion without suffering from minor disorders of stiffness and muscle soreness. Moreover, a period of training is an exercise in self-discipline and determination. The over-load principle of Steinhaus that muscular development is only obtained by giving muscles more and more to do, points to the value of a graded course of hard exercise of increasing intensity, while stamina can only be developed by repeated and sustained effort.

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[1] *The Physiology of Muscular Activity.* E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. P. 157.

[2] *Ibid.* See graph on p. 156.

If there is less dramatic danger attached to early and strenuous competitive athletics, it still seems reasonable from an educational point of view to exercise some measure of control. Admittedly, the successful runner is no more liable to swollen head and a loss of perspective than the prolific run-maker at cricket, but because it is not feasible to control the latter's run-making in a cricket match, that is no argument against some limitation of the number of athletic events to be entered by the former. Moreover, it would be rash to deny that, for physiological reasons, too early and too strenuous competitive athletics can be ill-advised. Although ill-health in the form of a weak heart is not confidently to be expected, it is at least a debatable point whether the hurried bringing on of a young athlete does not result in an enforced maturity with early spectacular performances which fail to be improved upon later, and which fall short of what might have been reached if less had been attempted over a longer period.[1] A considerable amount of experienced athletic opinion supports this view. Just as Lovelock, throughout the summer of 1936, severely rationed his number of races at all-out effort with the idea of being ready for the supreme effort at the Berlin Games, so might it not be advisable for the adolescent athlete to grade his efforts so as to reach a peak in the early twenties? Too many promising youngsters never fulfil their early promise, often, one supposes, due to being encouraged to do too much too early.[2]

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[1] *The Theory of Play*. E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. P. 179.

[2] 'Artificial stimulation by means of championships and record breaking should be avoided. These increase the Competitive effort, and, under 18 years, serious competitive effort is unwise. The rapid increase in weight, height and size of internal organs demands high metabolic activity and generous supply of energy. Depletion of this by excessive activity is undesirable.' *Principles of Physical Education.* Jesse Williams. W. B. Saunders Co. P. 81.

Training is desirable not only to produce athletic results of a high order, but also for its effects upon the musculature and the bony structure of the body. This view was expressed at the 1939 Conference on Athletics for School Children. 'The practice of athletics falls naturally into two sections,

1. Athletic Training,
2. Competition.

The Conference is of the opinion that athletic training forms the more important section. Not only does it promote healthy physical development, but it is also the means of securing ultimate performances of a high technical standard.'[1] In this case it seems that the means is more valuable than the end.

THE PROBLEM OF COMPETITION

There are three kinds of competition: direct contest against an opponent, competition against an externally set standard and competition to beat one's own previous best performance. Without doubt, in the past too much importance has been attached to the first named. Aware of this, the Conference recommended that 'it would be well worth while for teachers to consider by which method the needs for the children in the school can be best served. To encourage more general interest consideration might also be given to:

1. the extended use of standard tests,
2. the keeping of individual records.'

STANDARD TESTS AND AGE GROUPING

The use of standards is often on too restricted a scale. One standard is obviously inadequate, although all too frequently a single standard per event is all that is used.

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[1] *Report of the Second Conference on Athletics for School Children.* 1939. Ling Physical Education Association.

Here there is an incentive only to the boys whose ability roughly corresponds with the standard set. To most it will be either too easy or too difficult. Again, the Conference, recognising this defect, urges 'it is desirable that at least three standards in each event should be set up for each age group'.

This raises two points, (*a*) is an age limitation the best means of grouping entries? and (*b*) are three standards sufficient?

The object of grouping by any system is to cater for the interests of the child, ensuring that he is at an approximately similar stage of physical development to the next boy and safeguarding him against the possibility of having to compete outside his own class. During adolescence, however, the same age group can contain boys of all shapes and sizes, all at different stages of physical development, and therefore it seems reasonable to conclude that age, by itself, is not a very fair means of selection. Obviously weight and height also should be taken into consideration.

By the extended use of standards the school Sports Day can cater for more and more children rather than being just an elimination contest in which a residual number of finalists can contribute to their team's success. The Conference recommends three standards and dismisses more as impracticable for distances of less than 200 yards. This, however, has not been the experience of Shann of Canberra Grammar School. In his book [1] he explains a system whereby a whole school can be catered for so that every individual can have a measurable part to play in the School Sports. He takes McCloy's height, weight and age assessment as the most reliable means of grouping and develops also McCloy's system for standard assessment: 'for each rating group he' (McCloy [1]) 'gives the performances which are 0·6745 of a standard deviation below the mean. It is easy to establish standards corresponding to these figures. Since it is desirable to recognise *all* performances, those falling under 0·6745 below the mean should be classified as Standard I. Standard II is from 0·6745 below the mean, Standard III from the mean, Standard IV from 1 Standard deviation above the mean, Standard V from 2 Standard deviations above the mean, Standard VI from 3 Standard deviations above the mean.' [2]

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[1] *The Canberra System of Athletics.* F. Shann. Melbourne University Press.

This gives every performer something significant to aim at, and caters for all classes of ability. The also-rans, less common in an age–weight–height grouping system, still have an incentive to give of their best. Shann, however, criticises his use of McCloy's formula on the grounds that whereas four standards are provided for the upper half of competitors to strive for: 'for the lower 50% there are only two standards, above and below 0·6745 of a standard deviation from the mean. Yet it is the weaker performers who most need encouragement by the provision of a number of standards to recognise and encourage improvement.' While recognising the truth of this observation as a theoretical consideration, few would deny that a total of six standards per event is an outstanding achievement and far in advance of normal procedure.

'THE CANBERRA SYSTEM OF ATHLETICS'

This book should be studied by every specialist in Physical Education. Here we have a means explained and formulated that can bring every boy well into the picture. The champion still receives his recognition—more so, as individual performances are measured against the yardstick of a 'General Order'—but every entry has a contribution to make and a part to play with full encouragement to give of his best. The system of conversion of individual performance into points on the General Orders List is coupled with awards for standards and the assessment of an individual athletics quotient which, in that they are all secured for the same performance, measure the same thing, but, as Shann points out 'each method of scoring appeals to a different incentive, and so has value. . . . The allotment of points for a position on an Order is an appeal to a sense of competitive rivalry—the urge to do better than the other boys on the list for the event. The Standard and the Athletic Quotients, on the other hand, appeal in the main to the desire for self improvement—the wish to raise the quality of the competitor's own performance as high as possible.' [1] Here we have the fulfilment of the Conference's recommendations on competition: the need for an extended use of standards, and the keeping of individual records.

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[1] McCloy's book to which Shann refers is *The Measurement of Athletic Power*. A. S. Barnes & Co.

[2] *The Canberra System of Athletics*. F. Shann. Melbourne University Press. P. 14.

The organisation and administration of such a scheme seems formidable, at any rate to a non-mathematician, but it must be remembered that this is not merely a theoretical system, but one that has worked with increasing success (success being judged from the rapid increase in active support from the schools concerned) since 1938, not merely at Canberra and Trinity Grammar Schools, but later elsewhere in Australia. As Shann says 'the reward of seeing all the boys of a school taking a full share . . . more than compensates for any extra work that is required. . . . On a sports day during which practically every boy takes part in at least two keenly contested events, a 100 yds. race and a relay race, there is an atmosphere of intense interest and enthusiastic participation. Everybody is involved, everybody is aroused—it is an occasion for all, a real People's Day.' [1]

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[1] *The Canberra System of Athletics*. F. Shann. Melbourne University Press. P. 19.

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[1] *The Canberra System of Athletics.* F. Shann. Melbourne University Press. P. 68.

VIII

Boxing in Schools

THERE are three main charges that can be made against boxing as a sport: one moral, one physical and one social:

1. Boxing is the only sport in which the specific aim is to hurt an opponent.
2. Injuries thus sustained can be far reaching in their effect, and may not be assessed immediately and treated.
3. By encouraging boxing in schools and youth clubs Physical Educationalists may be preparing boys for eventual commercial exploitation.

Such charges demand careful consideration by all concerned with Physical Education, and warrant independent medical research on a considerable scale in this country. Opinions expressed in South Africa and America suggest that there is a distinct need for care in the conduct of the sport, both in amateur and professional boxing. Until this question has been carefully examined on a far wider scale there seems little need for panic as long as a common-sense view is taken, one founded upon experience.

First to be considered is whether in the course of boxing instruction and competition in schools, moral and physical harm is done to the child.

In boxing, the aim is to land as many blows with as much severity as a padded glove allows upon a limited portion of an opponent's body. It seems far fetched to maintain that the child is morally any the worse for the experience. The attempt is made dispassionately and without malice. In fact, under conditions of stress and pain it is imperative that the temper be kept under control. No claim is made that there is any great transference value from the ring to normal conditions of everyday life; but at least under these conditions a boy is taught to exercise coolness of judgement and self-control. Nor is any claim made that boxing is the only sport that exercises these qualities.

The question, therefore, seems to be whether or not boys who box are more truculent or physically more aggressive than their non-boxing brethren. Boys who are ignorant of the painful consequences of a fight, who have been fed upon the myth popular in the cinema and juvenile books—that the Englishman is always ready to settle disputes with his fists and invariably triumphs—those are the boys who are likely to indulge in promiscuous combat. Admittedly, the boxer is as much exposed to propaganda of this sort as the non-boxer, but he is more likely to realise that victory is dependent not upon right, but upon size, weight and skill. In schoolboy competitions he is trained to regard as essential to fair-play a careful grading according to weight, height and age, with supervision during the contest to see that there is not too great a disparity between the skill of the contestants. Like Gallio, the non-boxer is liable to care for none of these things.

With regard to the physical effects that can be suffered, obviously the field of schoolboy boxing is as far removed from the state of 'punch-drunkenness' as a glass of sherry is from 'delirium tremens'. Although any boxer is trying to land a sideways blow upon the point of the jaw to achieve a knock-out, few schoolboys achieve this ambition, and it is doubtful, in the schoolboy world, if there are as many cases of concussion in the ring as there are upon the Rugby field. However, still to be considered are the blows not severe enough to obtain a full knock-out but which repeatedly jolt the brain. Are schoolboy boxers going to suffer later in life from lapses of memory and impaired coordination. Here is an obvious field for investigation. Enquiries should be made among ex-public schoolboys from our boxing schools, among Naval Officers who were educated at Dartmouth, to find if they suffer from such disorders through having boxed in their youth, to find how acute are their sufferings, and to compare these injuries, if existent, with the dislocations, fractures and cartilage troubles associated with other games.

Moreover, it seems reasonable to suppose that if Physical Education no longer includes boxing, a sport that has a definite appeal to certain types of boys, then the chances of commercial exploitation are increased. Boys attracted by the idea of boxing—and what boy is not at some time or other?—are likely to be lured to clubs and organisations where trained educational advice is lacking. In this way, if boxing is banned from schools the very state of affairs that it is hoped to avoid may, in fact, be encouraged.

Two courses seem to remain:

1. That boxing of any kind in Great Britain should become as illegal as bear-baiting and cock-fighting.
2. That boxing should be properly taught and handled by the people best qualified to do so.

The second seems to be the saner course.

The existing limitations on conduct first imposed by the Queensberry Rules make the sport an inferior means of defence compared with other forms of combat, but Education is not concerned with equipping children for gang-warfare, and this in no way discredits boxing as a sport. Its inclusion in a scheme of Physical Education depends on:

1. whether it is good exercise,
2. whether it is good fun, and
3. whether it is morally and physically harmless.

In proper hands, it seems reasonable to suppose, it can be all three of these things with possible doubts as to its physical harmlessness. This most important point needs thorough medical investigation on a large scale.

Taught by class methods on a non-competitive basis, boxing has quite a wide appeal to boys during adolescence, and on a competitive basis to a considerable minority. It can provide good exercise and put life into the P.E. Lesson if introduced on a non-competitive, master-and-pupil basis as a class or group activity. It is another sport not dependent upon ball-skill that allows the non-ball-player a chance to express himself, and as such its inclusion in a scheme of Physical Education is as valuable as, say, that of athletics.

The moral doubts about the sport might more happily be applied to the non-boxing spectators in schools, who often seem attracted by a spectacle in which they are loath to partake. Here, however, the remedy is simple. Limit the onlookers to those who have entered for the competitions. This would safeguard the participants from charges of exhibitionism and the spectators from sadism, and if boxing's survival as a voluntary club activity at school was found to depend upon its spectacular appeal only, then its passing would not be regretted.

Some Topics for Discussion

1. From your own experience as a pupil or a teacher what is your opinion of P.E. as normally practised in Secondary Schools today?

2. Discuss the Aims of P.E. in general, with particular reference to the Secondary Modern School.

3. How widely can and should P.E. be interpreted in School?

4. It is often said that today we are in a transitional period regarding P.E. Where do you think we are going?

5. Discuss the P.E. Lesson and *a.* Informality
   b. Objectivity.

6. Trace the influence of the Infants' School on the P.E. Lessons of the Junior and Secondary Schools.

7. Discuss the problem of Class-management and 'the' child.

8. To what extent is the '33 Syllabus obsolete?

9. 'Within wide limits Postural deviations may be regarded as normal.' Discuss.

10. Discuss the evolutionary aspects of the upright stance.

11. Discuss *a.* the prehensile origin of the Foot,
    b. Foot re-education.

12. What is the problem of 'good' posture?
    Why is the static posture test held in less esteem than before?

13. How can 'carry-over' with regard to Posture be effected?

14. What part does Posture play in the P.E. Lesson?

15. Discuss the aesthetic and functional aspects of a good carriage.

16. Discuss the relationship between Bodily type and Posture.

17. Extravagant claims are often made with regard to the development and carry-over of certain qualities from P.E. to other situations in everyday life. Make a list of such popular claims, and discuss what in your opinion makes some transfer possible.

18. Select various Minor Games, relating them to specific Major ones, and estimate their value with regard to possible negative and positive transfer.

19. Evaluate: Complicated rhythmic jumping.
'Jumping to head an imaginary football.'
'Wandering ball' as a Rugby practice.
Land-drill in relation to swimming.
Competitive dribbling relays.
Weight-training and Athletics.

20. Comment on and discuss in the light of your knowledge of the Faculty Theory, the following statement: 'the good games-master will produce in his cricket pupils a degree of physical fitness, dexterity, bodily control, strategic reasoning, discipline, self-reliance, comparable with those developed by woodwork, eurhythmics, geometry and military training'. John Arlott: *Case for Teaching Cricket.*

21. Apply your knowledge of the transfer of training to the problem of progressive practices. Illustrate your arguments with examples relating to the teaching of:

a. a Major Game;
b. an Athletic event;
c. a Swimming stroke;
d. a Gymnastic activity.

22. Discuss the question of the influence of: (1) P.E., (2) the P.E. Lesson, and (3) Gymnastics, on the development of character.

23. Discuss the Canberra System regarding the administration of Athletics, with special attention to the problem of school time-keeping and six standards.

24. Discuss such general trainings as those of 'gymnastics' and 'basic movement' and their transfer effects to specific skills. Do you consider an 'effort'-training, divorced from a knowledge of the mechanics of a skill, to be of much relevance to the performance of a specific skill?

25. Discuss Professor Bartlett's claim (*The Mind at Work and Play*. P. 141) that there is greater measure of transfer to be expected from the relatively difficult to the relatively easy than vice versa. Discuss the implications of this regarding the learning process generally and progressive practices in particular.

26. Examine in the light of the 'over-load principle' the following statement of Knudsen (*Textbook of Gymnastics*. P. 8) '. . . feats of strength often use more strength than they promote'.

27. What do you consider are the constituents of a 'Kinæsthetic sense'?

28. Evaluate the various theories of play and examine (*a*) Physical Education, (*b*) The Physical Education lesson as an adequate outlet for play.

29. Is Physical Education an education *of* the physical or an education *through* the physical? (*The Administration of Health Education and Physical Education*. Jesse F. Williams and C. L. Brownell. W. B. Saunders Co. P. 14.)

Appendix A

SOMATOTYPES

Classifications of the various types of human physique have largely failed in the past through an attempt to simplify unduly a complex situation. The human race cannot be divided into a mere two or three physical types—whether it be by a rule-of-thumb classification of 'stocky, slender and intermediate' or the 'pyknic, asthenic and athletic' grading of Kretschmer. Such simplifications are all right so far as they go, but, as Sheldon demonstrated with four hundred undergraduates, over 70% defied assessment, revealing varying proportions of physical characteristics belonging to two or more of the main classifications—hence, Sheldon's development of a system of appraisal on a seven-point scale.

Accepting the principle of three basic types of physique, he preferred to rechristen them:

1. the endomorph,
2. the ectomorph,
3. the mesomorph,

names that were not chosen at random. In the embryonic stage the digestive organs develop from the endoderm; the muscles and bony structures from the mesoderm; and the skin from the ectoderm. This gives a clue to the basic type of physique indicated by the three classifications.

Sheldon's appraisal of physique involves careful mathematical calculations based upon height and weight and numerous measurements made from photographs of the subject in three standardised positions (see Figure); but it is claimed that with practice an accurate estimation can be made by a visual inspection only, just as an experienced farmer can assess the physical features of cattle without resorting to measurement.

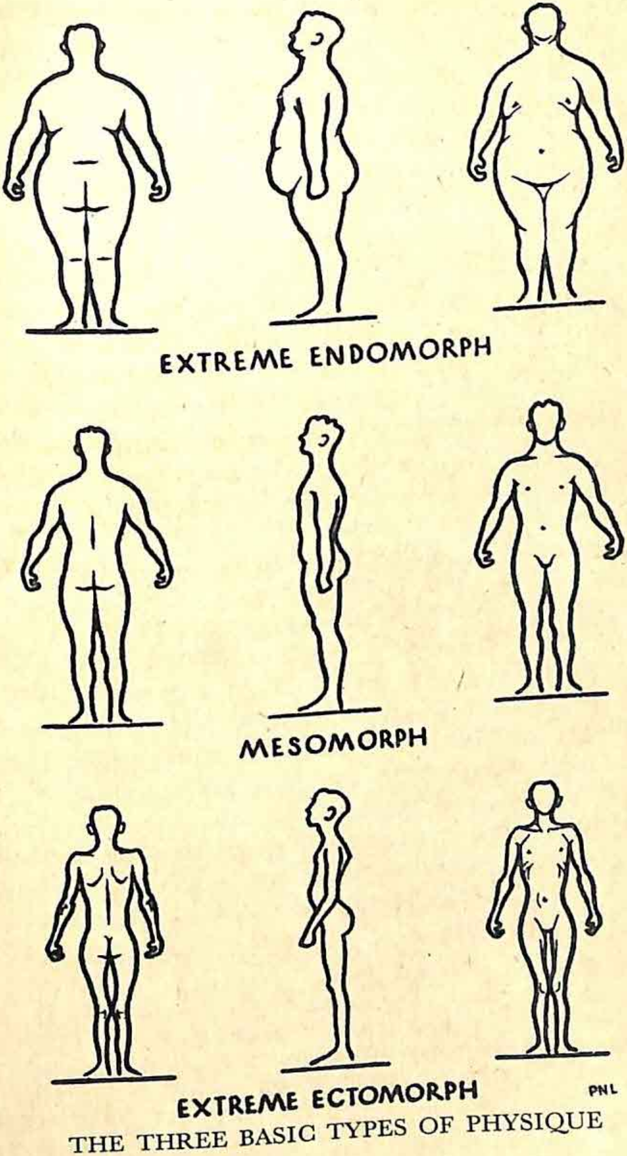
The possible combinations represented by the seven-point scale are three hundred and forty-three, but obviously many of these are possible only theoretically. As Schneider and Karpovitch point out, a man cannot be given full marks in each category as an extreme endo-, meso- and ecto-morph (777) at one and the same time. 'In all, Sheldon has described seventy-six somatotypes, of which fifty are common', a big advance upon the popular estimation of 'stocky, slender or intermediate.'

The scientific calculation of physique opens up interesting fields of speculation and investigation:

1. the correlation between physique and personality as expressed by preferences for different types of physical exertion;
2. the connection between physique and variations in posture;
3. bodily types and health;
4. to what extent nutrition and exercise can alter one's basic physical type.

FURTHER READING

Appraisal of Physical Fitness, Cureton. Pp. 70–124.
Physiology of Muscular Activity, Schneider and Karpovitch. Pp. 282–285.
Principles of Physical Education, Jesse Williams. Pp. 65–68.
Physique and Temperament in relation to Physical Education, Philip Smithells. Coulls, Somerville Wilke Ltd., Dunedin.
Up from the Ape, Hooton. Macmillan Co., New York. Pp. 666–698.



THE THREE BASIC TYPES OF PHYSIQUE

Appendix B

AN INVESTIGATION TO MEASURE THE EFFECTS OF THE COACHING OF SOCCER IN THE JUNIOR SCHOOL UPON ULTIMATE PERFORMANCE IN THE SECONDARY SCHOOL

Object of the Experiment

In view of the opinions expressed on pages 85 and 86, it was thought both relevant and of interest to attempt to find out if there are any grounds of expediency for what might be called the 'premature' playing of football. Thus the object of the experiment was to examine the effects of coaching in the Primary School stage and to see if, as a result, there was any measurable improvement upon performance at the top of the Secondary Modern School.

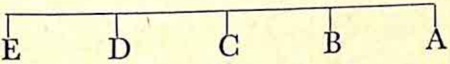
It is appreciated that whatever the outcome of these tests it could not affect the argument for and against Junior School football on any other grounds than that of expediency. Any conclusive evidence that early coaching has no effect upon later ability would not invalidate an argument that Soccer serves a need of the child at that time and therefore should not be discarded merely on the grounds that it has not been found to improve ultimate performance five years later.

These tests are, therefore, merely an investigation into the effectiveness of early coaching in terms of later ability.

Method

Through the cooperation of the teachers concerned with Physical Education at five local Secondary

Modern Schools selected at random, the football ability of the top classes was assessed on a five-point scale:



A = A very good schoolboy player, e.g. a better member of a good school-team, possessing both skill and idea of positional play.

B = A good player of or near good team standard.

C = Average—has some skill and some idea of positional play.

D = Less than average ability—an ineffectual player.

E = Very poor indeed.

The Junior Schools feeding these Secondary Schools were also graded but into four categories:

A = A school which has both good P.E. Lessons and football coaching.

B = Good P.E. Lessons, but no football coaching worthy of mention.

C = Poor P.E. Lessons, but has football coaching.

D = Poor P.E. Lessons and no football coaching.

This grading had to be retrospective, and necessitated the cooperation of the Organiser for the area, and the schools were graded according to his recollection of them in the years 1946 and '47. Thus boys who were at the top of the Junior School stage at that time would now be at the top of the Secondary Modern School.

What constitutes a 'good' P.E. Lesson and football coaching worthy of mention was left to the Organiser, whose assessments would be unbiased and based upon reasonable standards. However, in relation to the P.E. Lesson it was suggested that he should not take unduly into account 'formality' or 'informality', which is largely a question of approach, but instead the following:

1. Emphasis upon Part II, i.e. skill training of a general ball-training nature as suggested by the '33 Syllabus.
2. Vigorous exercise.

All gradings of the long-list of Primary Schools were made by the same person, i.e. the Organiser.

A total number of 217 children were examined from five Secondary Modern Schools in the area, and tables were drawn up for the Schools concerned under the following column headings:

Names, ages and soccer assessments for children from Primary Schools graded 'A'	Ditto, from Primary Schools graded 'B'	Ditto, from Primary Schools graded 'C'	Ditto, from Primary Schools graded 'D'

The soccer assessment of each child was then converted to a numerical scale, $A = 5$, $B = 4$, $C = 3$, $D = 2$, $E = 1$, and the whole treated statistically according to the technique of Analysis of Variance,[1] the total variance being analysed into two components: 'Variance Between Groups' and 'Variance Within Groups'. The significance of the differences between the groups was evaluated by comparing the two, i.e. 'Between Groups Variance' and the 'Within Groups Variance'. See Table opposite:

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[1] Lindquist, E. F. *Statistical Analysis in Educational Research.* Houghton Mifflin.

School No. 1.

Primary School Grade 'A'				Primary School Grade 'B'				Primary School Grade 'C'				Primary School Grade 'D'			
Child's Name	*F/ball Rating*	*Score*	*Score²*	*Child's Name*	*F/ball Rating*	*Score*	*Score²*	*Child's Name*	*F/ball Rating*	*Score*	*Score²*	*Child's Name*	*F/ball Rating*	*Score*	*Score²*
Name	E	1	1	Name	C	3	9	Name	A	5	25	Name	C	3	9
,,	C	3	9	,,	C	3	9					,,	B	4	16
,,	B	4	16	,,	C	3	9					,,	C	2	9
,,	C	3	9	,,	B	4	16					,,	D	2	4
,,	E	1	1	,,	B	4	16					,,	E	1	1
,,	B	4	16	,,	A	5	25					,,	C	3	9
,,	B	4	16	,,	B	4	16					,,	C	3	9
,,	B	4	16	,,	A	5	25					,,	C	3	9
				,,	C	3	9					,,	E	1	1
				,,	A	5	25					,,	C	3	9
				,,	E	1	1					,,	C	3	9
				,,	C	3	9					,,	A	5	25
				,,	B	4	16					,,	A	5	25
				,,	B	4	16					,,	C	3	9
				,,	C	3	9					,,	B	4	16
												,,	B	4	16
		T. 24	84			T. 54	210			T. —	—			T. 50	176
		M. 3				M. 3·6				M. —				M. 3·133	

G.T. = 128 G.M. = 3·282

G.T. × G.M. = 420·096
Total Sum of Squares = 470 − 420·096
= 49·104
Sum of Sq. 'Between Gps' = 24 × 3 + 54 × 3·6 + 50 × 3·133 − 420·096
= 423·5 − 420·096
= 3·404
Sum of Squares 'Within Groups' = 45·700.

Source of Variance	S.S.	df.	Variance	F
Between Groups .	3·404	2	1·702	$\frac{1·702}{1·269}$
Within Groups .	45·700	36	1·269	
Total . .	49·104	38		1·341

In this case F would need to be at least 3·26 to indicate any significant differences between groups.

The procedure was repeated for each of the five Schools with the following results:

	Source of Variance	S.S.	df.	Variance	F	
School No. 2	Between Groups	0·252	1	0·252	$\frac{0·252}{1·058}$	Not significant
	Within Groups	30·692	39	1·058		
	Total	30·944	40		—	
School No. 3	Between Groups	2·292	2	1·146	$\frac{1·146}{0·689}$	Not significant
	Within Groups	11·708	17	0·689		
	Total	14·000	19		1·66	
School No. 4	Between Groups	0·735	2	0·368	$\frac{0·368}{0·888}$	Not significant
	Within Groups	32·865	37	0·888		
	Total	33·6	39		0·414	
School No. 5	Between Groups	0·155	1	0·155	$\frac{0·155}{1·032}$	Not significant
	Within Groups	83·607	81	1·032		
	Total	83·762	82		—	

And, as can be seen, in each case no significant differences were obtained.

Then, as F may be very much smaller with a larger number of children, a grand analysis was carried out, adding all the schools together.

	A	B	C	D
Number . .	11	87	20	99
Total . .	30	244	60	270
Mean . .	2·727	2·805	3·0	2·727

G.T. = 604 G.T. × G.M. = 1,680·932

G.M. = 2·783

Total Sum of Squares = 1935·5 − 1,680·932
= 254·568

Sum of Squares Between Groups = 1682·52 − 1680·932
= 1·588

Sum of Squares Within Groups = 252·980.

	Source of Variance	S.S.	df.	Variance	F	
All schools	Between Groups	1·588	3	0·529	$\frac{0{\cdot}529}{1{\cdot}188}$	Not significant
	Within Groups	252·980	213	1·188		
	Total	254·568	216		—	

Again the results were not significant.

An examination of the Primary School Grades reveals that most children came from Group D (poor P.E. Lessons and no F./B. coaching), followed numerically by B (good P.E. Lessons and no F./B. coaching), C and A, while the highest mean football performance came from Group C (Poor P.E. Lessons but with F./B. coaching) followed by B, with A and D bottom, but with no significant differences between them.

To allow for any systematic differences in valuing standards between schools, the numbers in each grade must be either (*a*) the same or (*b*) proportional from school to school. Since there was no fixed pattern of numbers falling into each group, the B and D Groups were considered, as the largest number of children came from the Primary Schools rated thus. The numbers were then made equal in these two groups within each school by dropping excess cases at random. School No. 3 was omitted from this procedure, having no children in the D and only four from the B Group of Primary Schools.

		B	D	
School No. 1	T.	54	49	103
	M.	3·6	3·267	—
School No. 2	T.	27	31	58
	M.	2·455	2·818	—
School No. 4	T.	32	39	71
	M.	2·462	3	—
School No. 5	T.	93	91	184
	M.	2·657	2·6	—
G	T.	206	210	416
	M.	2·784	2·838	—

In this way Groups B and D were made equal within four of the five schools for reanalysis, taking out school differences, but as the Means for B and D were so close, it was clear that the procedure was not justified.

CONCLUSIONS

The very lack of significance already mentioned is not of itself altogether without some significance:

1. There seems to be no indication, as far as these tests are concerned, that football training in the Junior School stage makes any measurable difference to eventual performance later on in the Secondary School.
2. That the Junior P.E. Lesson, despite its general ball-training bias, makes no measurable difference to ultimate football skill.

However, it must be acknowledged that the investigation was on a limited scale, and the evidence, although of interest, cannot be regarded as conclusive, though warranting further testing on a larger scale, perhaps in another area where more zealous Junior School football exists. I personally should be interested to cooperate with anyone from such an area. Obviously the scheme needs enlarging. Perhaps the grading of the Primary Schools could be revised to some extent. For, while it is felt that the grading of the boys' football skill was quite happily managed (as the schools in question all inter-play, and most teachers would have a reasonably uniform idea of what constitutes 'a good school team') the grading of the Primary Schools was rather rough and ready and needs perhaps more meticulous analysis.

E.g. A = Sound general school coaching only.
B = Sound general school coaching and intensive team coaching.
C = No general school coaching of any standard but only intensive coaching of team possibles.
D = No general coaching and no team coaching.

Care would need to be taken to ensure that school coaching was of sufficient standard of effectiveness to be of significance, else all that might be established could be that the general exercise of the P.E. Lesson is as good a foundation for later football skill as that of haphazard coaching.

Furthermore, some account should be taken of other possible factors affecting final ability.

E.g. 1. The P.E. Lesson—good, bad, indifferent.
2. School coaching—general or team only.
3. Presence of strong professional football in area (Yes or No).
4. Presence of recreation grounds and facilities for private practice (Yes or No).

SUMMARY

1. There are indications that Junior School football coaching has little measurable influence on later ability.
2. There seems to be no marked carry-over from the general ball practices of the Primary P.E. Lesson to ultimate soccer ability.
3. This investigation has been only a pilot scheme. There is obviously a need for further and wider investigation with greater safeguards.

Bibliography

(The countries of origin of the books are given when they are not British. In some cases there are British editions available.)

1. *A Brief History of Physical Education*. Emmett A. Rice. A. S. Barnes. (U.S.A.)
2. *Analysis of Human Motion*. M. G. Scott. W. B. Saunders Co. (U.S.A.)
3. *Anatomy and Physiology for Students of Physiotherapy*. C. F. V. Smout and R. J. S. McDowall. Edward Arnold & Co.
4. *Anatomy and Physiology for P.T. Instructors*. H.M.S.O.
5. *Applied Physiology*. Samson Wright. Oxford University Press.
6. *Assessment of Personality in Junior School Children*. G. E. R. Burroughs. The Educational Review. Feb. 1950.
7. *Corrective Physical Education*. Josephine Rathbone. W. B. Saunders Co. (U.S.A.)
8. *Education through Experience in the Infant School Years*. Edna Mellor. Basil Blackwell.

9. *Effort.* R. Laban and F. C. Lawrence. Macdonald & Evans.
10. *Educational Psychology.* Charles Fox. Kegan Paul.
11. *Elementary Anatomy and Physiology.* M. R. Mulliner. Henry Kimpton. (U.S.A.)
12. *Exercise and Physical Fitness.* G. Z. Dupain. Shakespeare Head Press. (Australia.)
13. *Experiments in Homework and Physical Education.* A. Sutcliffe and J. W. Canham. John Murray.
14. *Formal Training.* H. R. Hamley. British Journal of Educational Psychology. Nov. 1936.
15. *General Anthropology.* Franz Boas. D. C. Heath & Co. (U.S.A.)
16. *Growth and Development of the Young Child.* W. Rand, M. E. Sweeny and E. L. Vincent. W. B. Saunders Co. (U.S.A.)
17. *Gymnastic Handbook.* J. G. Thulin. Sydsvenska Gymnastik-Institutet Lund. (Sweden.)
18 *Human Kinetics and Analysis of Body Movement.* T. McAnderson. Heinemann.
19. *Hamstring Length and the Tilt of the Pelvis.* A. B. Appleton. Journal of P.E. and School Hygiene. July 1941.
20. *Human Physiology.* P. G. Stiles. W. B. Saunders Co. (U.S.A.)
21. *Introduction to Physical Education.* E. W. Nixon and F. W. Cozens. W. B. Saunders Co. (U.S.A.)
22. *Kinesiology.* Katharine F. Wells. W. B. Saunders Co. (U.S.A.)
23. *Kinesiology.* Leon Kranz. C. V. Mosby Co. (U.S.A.)
24. *Life in the Nursery.* Lillian de Lissa. Longmans Green & Co.
25. *Massage and Remedial Exercises.* N. M. Tidy. John Wright & Sons.
26. *Motor Ability in Relation to P.E.* B. D. Misselbrook. Journal of P.E. and School Hygiene. July 1941.
27. *Patterns of Muscular Activity in Posture and Movement.* W. F. Floyd and P. H. S. Silver. Science News No. 22. Penguin Books.
28. *Physical Activities in Boys' Schools.* F. J. C. Marshall. University of London Press.
29. *Physical Anthropology.* E. P. Stibbe. Edward Arnold.
30. *Physical Education.* E. H. Le Maistre. Oxford University Press. (Australia.)
31. *Physical Education and Youth.* A. D. Munrow. Journal of P.E. and School Hygiene. March 1941.
32. *Physical Education: Interpretations and Objectives.* Jay. B. Nash. A. S. Barnes. (U.S.A.)
33. *Physical Fitness Appraisal and Guidance.* T. K. Cureton. Henry Kimpton. (U.S.A.)
34. *Physical Training, Games and Athletics in Schools.* M. B. Davies. Geo. Allen & Unwin.
35. *Physique and Temperament in Relation to P.E.* P. Smithells. C. S. Wilke, Dunedin. (New Zealand.)

36. *Posture*. A. B. Appleton. Physical Education Journal. March 1946.
37. *Posture*. D. Hanson and A. Broman. Ling Physical Education Association.
38. *Purposeful Enjoyment*. J. R. Thatcher. E. J. Arnold.
39. *Primary Gymnastics*. N. Bukh. Methuen. (Denmark.)
40. *Psychology*. N. L. Munn. Geo. Harrap & Co. (U.S.A.)
41. *Relaxation*. A. D. Munrow. Physical Education Journal. March 1949.
42. *Report on Some Aspects of Physique in Boys and Girls*. R. E. Roper. Ling Physical Education Association.
43. *Skill and Physical Education*. P. McIntosh. Physical Education Journal. Nov. 1948.
44. *Skill in Work and Play*. T. H. Pear. Methuen.
45. *Suggestions for the use of Small Apparatus in Physical Education*. I. Munden. Ling Physical Education Association.
46. *Textbook of Gymnastics*. K. A. Knudsen. Churchill. (Denmark.)
47. *The Administration of Health Education and Physical Education*. Jesse F. Williams and C. L. Brownell. W. B. Saunders Co. (U.S.A.)
48. *The Canberra System of Athletics*. F. Shann. Melbourne University Press. (Australia.)
49. *The Heights and Weights of Boys and Girls*. A. Sutcliffe and J. W. Canham. John Murray.
50. *The Human Foot*. Dudley J. Morton. Columbia University Press. (U.S.A.)
51. *The Living Body*. C. H. Best and N. B. Taylor. Chapman & Hall. (Canada.)
52. *The Measurement of Skill*. Sir F. C. Bartlett. In *Occupational Psychology* (The Journal of the National Institute of Industrial Psychology). Jan. and April 1948.
53. *The Mind at Work and Play*. Sir F. C. Bartlett. Geo. Allen & Unwin.
54. *The Physiology of Muscular Activity*. E. C. Schneider and P. V. Karpovitch. W. B. Saunders Co. (U.S.A.)
55. *The Principles of Physical Education*. Jesse F. Williams. W. B. Saunders Co. (U.S.A.)
56. *The Theory of Play*. E. D. Mitchell and B. S. Mason. A. S. Barnes & Co. (U.S.A.)
57. *The Universal Constant in Living*. F. M. Alexander. Chaterson.
58. *Theory of Gymnastics*. J. Lindhart. Methuen. (Denmark.)
59. *Under Five*. H.M.S.O.
60. *Up from the Ape*. E. A. Hooton. Macmillan Co. (U.S.A.)

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